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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Sustainable and Smart Mobility Strategy – putting European transport on track for the future

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1 OUR VISION

1. **Mobility and transport matters to us all.** From daily commuting to work, visiting family and friends, tourism, to the proper functioning of global supply chains for the goods in our shops and for our industrial production, mobility is an enabler of our economic and social life. Free movement of people and goods across its internal borders is a fundamental freedom of the European Union (EU) and its single market. Travelling in the EU has led to greater cohesion and a strengthened European identity. As the second-largest area of expenditure for European households, the transport sector contributes 5% to European GDP and directly employs around 10 million workers.

2. Whilst **mobility brings many benefits for its users, it is not without costs for our society.** These include greenhouse gas emissions, air, noise and water pollution, but also accidents and road crashes, congestion, and biodiversity loss – all of which affect our health and wellbeing. Past efforts and policy measures have not yet sufficiently addressed these costs. The transport sector's greenhouse gas emissions have increased over time and represent now as much as a quarter of the EU's total.

3. By far, **the most serious challenge facing the transport sector is to significantly reduce its emissions and become more sustainable**. At the same time, this transformation offers great opportunities for better quality of life, and for European industry across the value chains to modernise, create high-quality jobs, develop new products and services, strengthen competitiveness and pursue global leadership as other markets are moving fast towards zero-emission mobility. Given its high proportion of total EU greenhouse gas emissions, the EU's goal of at least -55% greenhouse gas reduction target by 2030 and of climate neutrality by 2050 will be reached, only by introducing more ambitious policies to reduce transport's reliance on fossil fuels without delay and in synergy with zero pollution efforts. **The success of the European Green Deal**[1] **depends on our ability to make the transport system as a whole sustainable.**

4. The COVID-19 pandemic has clearly demonstrated that safeguarding the well-functioning single market is vital for the EU. The crisis has shown the essential role played by transport and the social, health and economic costs when free movement of people, goods and services is severely constrained or even curtailed altogether. The preservation of supply chains and **a coordinated European approach to connectivity and transport activity are essential to overcome any crisis** and strengthen the EU's strategic autonomy and resilience.

5. Therefore, **ensuring that our transport system is truly resilient against future crises must also be a key objective of the EU's transport policy** going forward. Completing the Single European Transport Area as envisioned by the 2011 White Paper[2] still remains a cornerstone of European transport policy. Fostering cohesion, reducing regional disparities

[1] COM (2019) 640 final, "The European Green Deal".
[2] COM (2011) 144 final, "White Paper – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system". The Commission has also evaluated this White Paper in SWD (2020) 410 and SWD (2020) 411.

as well as improving connectivity and access to the internal market for all regions, remains of strategic importance for the EU. The COVID-19 pandemic had a significant impact on mobility. In the context of the recovery from this severe crisis, public support should help mobility "build back better" and leap forward to a sustainable and smarter future.

6. **Greening mobility must be the new licence for the transport sector to grow.** Mobility in Europe should be based on an efficient and interconnected multimodal transport system, for both passengers and freight, enhanced by an affordable high-speed rail network, by abundant recharging and refuelling infrastructure for zero-emission vehicles[3] and supply of renewable and low-carbon fuels, by cleaner and more active mobility in greener cities that contribute to the good health and wellbeing of their citizens.

7. **Digitalisation will become an indispensable driver for the modernisation of the entire system**, making it seamless and more efficient. Europe also needs to use digitalisation and automation to further increase the levels of safety, security, reliability, and comfort, thereby maintaining the EU's leadership in transport equipment manufacturing and services and improving our global competitiveness through efficient and resilient logistics chains.

8. This evolution should leave nobody behind: **it is crucial that mobility is available and affordable for all, that rural and remote regions are better connected[4], accessible for persons with reduced mobility and persons with disabilities, and that the sector offers good social conditions, reskilling opportunities, and provides attractive jobs**. The European Pillar of Social Rights is the European compass to make sure that the green and digital transitions are socially fair and just.

9. **Overall, we must shift the existing paradigm of incremental change to fundamental transformation.** Thus, this strategy sets out a roadmap for putting European transport firmly on the right track for a sustainable and smart future. To make our vision a reality, it identifies 10 flagship areas with an action plan that will guide our work in the years to come. The scenarios underpinning the strategy, common to those supporting the 2030 climate target plan[5], demonstrate that, with the right level of ambition, the combination of policy measures set out in this strategy can deliver **a 90% reduction in the transport sector's emissions by 2050.** Taking also into account the analysis presented in the accompanying Staff Working Document[6], various **milestones** are set out to show the European transport system's path towards achieving our objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for our future policies, such as:

   By 2030:

   - at least 30 million zero-emission vehicles will be in operation on European roads.
   - 100 European cities will be climate neutral.
   - high-speed rail traffic will double.
   - scheduled collective travel of under 500 km should be carbon neutral within the EU.
   - automated mobility will be deployed at large scale.
   - zero-emission vessels will become ready for market

   By 2035:

   - zero-emission large aircraft will become ready for market.

[3] In this Communication the term 'vehicle' refers, as relevant in the given context, to all types of vehicles, including, among others, cars, lorries, buses, coaches, light vehicles, trains, aircraft, ships, boats, ferries, etc.
[4] This aspect will be further examined as part of the Commission Communication on the long-term vision for rural areas in 2021.
[5] COM (2020) 562 final, "Stepping up Europe's 2030 climate ambition - Investing in a climate-neutral future for the benefit of our people"
[6] SWD (2020) 331

By 2050:

- nearly all cars, vans, buses as well as new heavy-duty vehicles will be zero-emission.
- rail freight traffic will double.
- high-speed rail traffic will triple.
- the multimodal Trans-European Transport Network (TEN-T) equipped for sustainable and smart transport with high speed connectivity will be operational for the comprehensive network.

2 SUSTAINABLE MOBILITY – AN IRREVERSIBLE SHIFT TO ZERO-EMISSION MOBILITY

10. The European Green Deal calls for a 90% reduction in greenhouse gas emissions from transport, in order for the EU to become a climate-neutral economy by 2050, while also working towards a zero-pollution ambition. To achieve this systemic change, **we need to (1) make all transport modes more sustainable, (2) make sustainable alternatives widely available** in a multimodal transport system **and (3) put in place the right incentives** to drive the transition. **These are the three pillars of our future actions.**

11. This implies that **all policy levers must be pulled**: (1) **measures to significantly reduce the current dependence on fossil fuels** (by replacing existing fleets with low- and zero-emission vehicles and boosting the use of renewable and low-carbon fuels); (2) **decisive action to shift more activity towards more sustainable transport modes** (notably increasing the number of passengers travelling by rail and commuting by public transport and active modes, as well as shifting a substantial amount of freight onto rail, inland waterways, and short sea shipping); and (3) **internalisation of external costs** (by implementing the 'polluter pays' and 'user pays' principles, in particular through carbon pricing and infrastructure charging mechanisms).

2.1 We need to make all modes of transport more sustainable

12. **All transport modes are indispensable for our transport system and this is why they must all become more sustainable**. As the first pillar of our approach, we must boost the uptake of low- and zero-emission vehicles as well as renewable and low-carbon fuels for road, waterborne, air and rail transport, without further delay. We must support research and innovation (R&I) on competitive, sustainable and circular products[7] and services, ensure that the right vehicles and fuels are supplied by the industry, put in place the necessary infrastructure, and incentivise demand by end-users. This is essential to reach our 2030 and 2050 climate targets as well as zero pollution ambition and to enable European companies to remain industrial leaders globally. Maintaining technology-neutrality across all modes is key, but this should not lead to inaction on eliminating fossil fuel-based solutions.

FLAGSHIP 1 – BOOSTING THE UPTAKE OF ZERO-EMISSION VEHICLES, RENEWABLE & LOW-CARBON FUELS AND RELATED INFRASTRUCTURE

13. Although it is growing rapidly, the proportion of low- and **zero-emission vehicles in the vehicle fleet is far too low** today. Standards on CO_2, air pollutant emissions, and public procurement rules, such as those in the Clean Vehicle Directive[8], will continue to be key policy-drivers in our transition towards zero-emission mobility in road transport and

[7] Circular products and services will contribute to the overall sustainability of transport. The Circular Economy Action Plan (COM (2020) 98 final) identifies seven key product value chains, notably batteries & vehicles and construction,

[8] Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles (Text with EEA relevance.) OJ L 188, 12.7.2019, p. 116–130

through the increased supply of zero-emission vehicles, will make sustainable mobility more affordable for all. Therefore, in order to meet the targets put forward in the 2030 climate target plan and ensure a clear pathway from 2025 onwards towards zero-emission mobility, the Commission will propose a revision of the **CO_2 standards** for cars and vans by June 2021. The Commission will also review the CO_2 standards for heavy duty vehicles in this direction.

14. Significant efforts have been made over the last 5 years to reduce emissions of air pollutants from motor vehicles. Cars sold today emit significantly less pollutants than those in 2015. But more can be done: the upcoming proposal for **more stringent air pollutant emissions standards** for combustion engine vehicles (Euro 7) will ensure that only future-proof low-emission vehicles come to the market.

15. The partnerships envisaged for Horizon Europe, such as 'Batteries', '2Zero' and 'Clean Hydrogen', could contribute to the supply of innovative vehicle technologies. At the same time, a comprehensive policy is needed to **stimulate demand for zero emission vehicles**, without barriers across our single market, while fully respecting the Union's international obligations. The above environmental standards should be accompanied by measures that increase demand for these vehicles, such as carbon pricing, taxation, road charging, and the revision of rules on the weights and dimensions of heavy-duty vehicles. The Commission will propose actions to boost the uptake of zero-emission vehicles in corporate and urban fleets. In addition, the new regulation on batteries will ensure that batteries placed on the EU market are sustainable and safe all along their entire life cycle. Sustainability and end-of-life cycle requirements, including on carbon footprint and ethical and sustainable sourcing of raw materials, are essential to reduce environmental footprint of electric vehicles.

16. Our **roadworthiness** legislative framework should be adjusted to ensure the lifetime compliance of vehicles with emission and safety standards. A single faulty vehicle can pollute our air more than several thousand clean ones[9].

17. The evolution of road vehicle engines towards zero emission does not as such solve issues raised by the use of tyres, which still cause noise and microplastics. The latter pollute our waters and seas, and can ultimately enter the food chain. **High-performing tyres** should be further promoted as they reduce energy consumption and emissions (including of rolling noise) while maintaining vehicle safety. The upcoming revision of the Directive on end-of life vehicles will also aim at reducing the overall environmental footprint of the production and dismantling of cars.

18. Fuel suppliers and operators should now have a clear signal that transport fuels must become carbon-neutral, and that **sustainable renewable and low-carbon fuels must be deployed on a large scale without delay**. The Commission will consider additional measures to support these fuels, possibly through minimum share or quotas through the revision of the recast Renewable Energy Directive.

19. For **road transport**, zero-emission solutions are already in deployment. Manufacturers are now heavily investing into battery-electric vehicles. Market take-up is already growing, particularly for cars, vans and buses used in cities, while lorries and coaches are emerging. Manufacturers are also investing into hydrogen fuel-cell vehicles, particularly for use in commercial fleets, buses and heavy duty transport. These promising options are supported under the EU energy system integration[10] and hydrogen[11] strategies as well as the strategic

[9] See for example: SWD(2012) 206 final, and more recently, testing carried out in Belgium. https://magazine.vab.be/wp-content/uploads/2020/02/Roetfilter-Persdossier.pdf

[10] COM (2020) 299 final, "Powering a climate-neutral economy: An EU Strategy for Energy System Integration"

action plan on batteries[12]. Energy efficiency shall be a criterion for prioritising future choice of suitable technologies looking at the whole life-cycle. Transitional technological solutions should fully respect the CO_2 and pollution standards. **Rail transport** will also need to be further electrified; wherever this is not viable, the use of hydrogen should be increased.

20. **Air and waterborne transport** have greater decarbonisation challenges in the next decades, due to current lack of market ready zero-emission technologies, long development and life cycles of aircraft and vessels, the required significant investments in refuelling equipment and infrastructure, and international competition in these sectors. EU international emissions from navigation and aviation have grown by more than 50% since 1990. Action in these sectors is urgently needed, including as they recover from the current crisis. These modes must have priority access to additional renewable and low-carbon liquid and gaseous fuels[13], since there is a lack of suitable alternative powertrains in the short term. The ReFuelEU Aviation and FuelEU Maritime initiatives will boost the production and uptake of sustainable aviation and maritime fuels and address this issue. Furthermore, the Commission will consider to establish a Renewable and Low-Carbon Fuels Value Chain Alliance, within which public authorities, industry and civil society, will cooperate to boost the supply and deployment of the most promising fuels, complementing action under the European Clean Hydrogen Alliance and building on the success of the European Battery Alliance[14].

21. In order to **improve the energy efficiency and reduce emissions of aircraft and vessels**, ambitious standards for their design and operation must be promoted. The EU must continue working closely with all international organisations, such as the International Civil Aviation Organisation (ICAO) and the International Maritime Organisation (IMO), on concrete measures aimed at reaching science-based global emission reduction goals consistent with the Paris Agreement.[15] Significant efforts are also needed to develop disruptive technologies to bring zero-emission vessels and aircraft to the market. The Union should create the enabling environment to achieve this, including through adequate carbon pricing policies and research and innovation (R&I) in particular through the partnerships that could be put in place under Horizon Europe (such 'Zero Emission Waterborne Transport', 'Clean Aviation' and 'Clean Hydrogen'). In addition, more efficient traffic management, such as through the Single European Sky, can bring about substantial environmental gains[16]. These activities are essential items in the '**basket of measures' needed to decarbonise aviation and maritime transport**, where global actions remain critical.

22. The increased deployment and use of renewable and low-carbon fuels must go hand-in-hand with the creation of a comprehensive network of **recharging and refuelling infrastructure** to fully enable the widespread uptake of low- and zero-emission vehicles in all transport modes. "Recharge and refuel" is a European flagship under the Recovery and Resilience Facility[17]: by 2025, the aim is to build half of the 1 000 hydrogen stations and one million out of 3 million public recharging points[18] needed by 2030. The ultimate goal is

[11] COM (2020) 301 final, "A hydrogen strategy for a climate-neutral Europe"
[12] COM (2018) 293 final, "ANNEX 2 – Strategic Action Plan on Batteries"
[13] These could be for instance hydrogen, hydrogen-based synthetic fuels and advanced biofuels. Safety standards for waterborne transport on hydrogen, for example, need to be developed early on to incentivise early movers and certification procedures should be as straightforward as possible, without compromising overall safety levels.
[14] https://ec.europa.eu/growth/industry/policy/european-battery-alliance_en
[15] The EU and its Member States should pursue this ambition at the next ICAO General Assembly in 2022.
[16] This can reduce up to 10% of air transport emissions and also ATM could help to address the non-CO2 climate impacts of aviation.
[17] COM(2020) 575 final, "Annual Sustainable Growth Survey 2021"
[18] The number of public recharging points needed will be assessed in detail as part of the Impact Assessment accompanying the revision of the Directive on Alternative Fuels Infrastructure.

to ensure a dense, widely-spread network to ensure easy access for all customers, including operators of heavy-duty vehicles. The Commission will publish a strategic roll-out plan to outline a set of supplementary actions to support the rapid deployment of alternative fuels infrastructure, including in areas where persistent gaps exist. These would include recommendations on planning and permitting processes as well as on financing, developed in collaboration with the Sustainable Transport Forum of the Commission that brings together key public and private representatives of the entire value chain.[19]

23. Europe also needs to end the persistent fragmentation and pervasive lack of interoperable recharging/refuelling services across Europe for all modes. In the context of the **upcoming revision of the Directive on Alternative Fuels Infrastructure** (AFID), the Commission will consider options for more binding targets on the roll-out of infrastructure, and further measures to ensure full interoperability of infrastructure and infrastructure use services for all alternatively fuelled vehicles. Adequate information for consumers to end the current lack of transparency on pricing, and facilitating seamless cross-border payments are among the key issues to tackle. Furthermore, the expected major uptake of battery-electric vehicles and other forms of e-mobility requires the smooth integration into the electricity grid. The deployment of smart recharging infrastructure will help to provide storage capacity and flexibility to the electricity system. Next to the revision of AFID, a revision of the Trans-European Transport Network (TEN-T) Regulation and other policy instruments such as the recast Renewable Energy Directive and its accounting mechanism for electricity, as well as the Energy Performance of Buildings Directive with a view to increasing the goals for charging points in our buildings. The Commission will ensure alignment with the necessary grid investments under its initiatives under the EU energy system integration and hydrogen strategies.

FLAGSHIP 2 – CREATING ZERO-EMISSION AIRPORTS AND PORTS

24. **Ports and airports** are key for our international connectivity, for the European economy, and for their regions. In their transition to zero-emission nodes, the best practices followed by the most sustainable airports and ports[20] must become the new normal and enable more sustainable forms of connectivity. Ports and airports should become multimodal mobility and transport hubs, linking all the relevant modes. This will improve air quality locally thereby contributing to improved health of nearby residents. Inland and sea ports have a great potential to become new clean energy hubs for integrated electricity systems, hydrogen and other low-carbon fuels, and testbeds for waste reuse and the circular economy.

25. The Commission will propose **measures to make our airports and ports clean**, by incentivising the deployment of renewable and low-carbon fuels and feeding stationed vessels and aircraft with renewable power instead of fossil energy, incentivising the development and use of new, cleaner and quieter aircraft and vessels, revising airport charges, greening ground movements at airports as well as port services and operations, optimisation of port calls, and through a wider use of smart traffic management. The Commission will also follow-up on the measures suggested in the European Union

[19] Where necessary, other market and finance actors will be invited to this process. Fostering recharging infrastructure in the private and public building stock is of particular relevance in this context: the large majority of all recharging takes place at home or work. Full alignment with the ongoing Renovation Wave initiative and mutual reinforcement will be ensured. The Commission will set up a high-level "Recharge and Refuel" panel to validate the findings of this process.

[20] Such as the EcoPorts or Airport Carbon Accreditation initiatives, developed by the European Sea Ports Organisation (ESPO) and ACI EUROPE, respectively.

Aviation Safety Agency (EASA) report in relation to the updated analysis of the non-CO_2 climate impacts of aviation. [21]

26. **Public and private investment** in local renewable energy production, in more sustainable multimodal access and in fleet renewals[22] in aviation and waterborne transport must increase. Some of these investments would benefit from the establishment of relevant sustainable taxonomy criteria that covers the specificities of each mode, including during transition to zero emissions. The revised lending policy to be decided by the European Investment Bank (EIB) can equally be expected to be helpful.

27. In synergy with the deployment of alternative marine fuels, efforts under the zero pollution ambition should be made to drastically reduce the broader environmental footprint from the sector. Delivering on the establishment of wide ranging '**Emission Control Areas**' in all EU waters ultimately aiming at zero pollution to air and water from shipping for the benefits of sea basins, coastal areas and ports should be a priority. In particular, the Commission has spearheaded efforts for covering the Mediterranean Sea and it aims to start similar work for the Black Sea. Furthermore, the EU legislation on ship recycling[23] will be reviewed, in order to determine possible measures to strengthen that legislation, i.e. to further promote safe and sustainable ship recycling practices.

Milestones[24] on reducing the current dependence on fossil fuels:

1) *By 2030, there will be at least 30 million zero-emission cars and 80 000 zero-emission lorries in operation.*
2) *By 2050, nearly all cars, vans, buses as well as new heavy-duty vehicles will be zero-emission.*
3) *Zero-emission ocean-going vessels and large zero-emission aircraft will become market ready by 2030 and 2035, respectively.*

2.2 We need to make sustainable alternatives widely available to enable better modal choices

28. As a second pillar of our approach, **sustainable alternatives must be made widely available now** in a fully integrated and seamless multimodal mobility system. The EU cannot rely exclusively on technological solutions: immediate action to adapt our mobility system is necessary to tackle climate change and reduce pollution. Multimodality takes advantage of the strengths of the different modes, such as convenience, speed, cost, reliability, predictability, and in combination, can offer more efficient transport solutions for people and goods. The COVID-19 pandemic has demonstrated how increased multimodality is also crucial to improving the resilience of our transport system and how ready the public is to embrace sustainable alternative modes of travel.

29. **People are willing to switch to more sustainable modes of transport**, in particular in their daily mobility, with the main condition for switching being the cost[25], availability and

[21] See COM(2020) 747 final, "Updated analysis of the non-CO_2 climate impacts of aviation and potential policy measures pursuant to EU Emissions Trading System Directive Article 30(4)"
[22] For instance, the newest generation of aircraft, already available, reduces CO_2 emissions by 20-25% as well as the noise footprint.
[23] Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC, OJ L 330, 10.12.2013, p. 1.
[24] Taking also into account the analysis presented in the accompanying Staff Working Document, these milestones are set out to show the European transport system's path towards achieving our objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for our future policies.

speed. The EU must help create appropriate conditions for the higher uptake of sustainable alternatives that are safe, competitive and affordable. Where suitable alternatives are in place at competitive prices, frequencies and comfort levels, people choose the more sustainable mode[26].

30. At the same time, **mobility patterns and consumer behaviour are changing**. These changes are being reinforced by the COVID-19 pandemic and are being largely facilitated by digital solutions. Teleworking, video-conferencing, electronic commerce, the uptake of shared and collaborative mobility services, all contribute to the ongoing transformation of mobility.

FLAGSHIP 3 – MAKING INTERURBAN AND URBAN MOBILITY MORE SUSTAINABLE AND HEALTHY

31. Decisive action is needed to transform the transport sector into a truly multimodal system of sustainable and smart mobility services. To achieve this, Europe should build a high quality transport network with high-speed rail services on short-haul distances and with clean aviation services improving coverage of long-haul routes. The Commission will work towards creating enabling conditions for transport operators to offer travellers by 2030 carbon-neutral choices for scheduled collective travel below 500 km within the EU. In 2021-2022, the Commission will pursue this ambition, when revising the relevant EU legislation. Subject to compliance with competition law, airlines should sell an increasing number of multimodal tickets. Investment should be geared towards upgrading the necessary TEN-T infrastructure to enable the shift towards more sustainable links. Action will be taken to build an overall transport system where EU investments, State aid, rules for capacity allocation and public service obligations (PSOs) are geared towards fulfilling mobility needs and incentivising different multimodal options.

32. The **European Year of Rail of 2021 is an excellent opportunity for** Member States, the Commission and the **rail sector to boost cross-European connections**. With the implementation of the Fourth Railway Package and through the opening of rail markets to competition, railway operators will become more responsive to customer needs, and improve the quality of their services and their cost-effectiveness. Harmonised EU-wide vehicle approval will also reduce costs for cross-border trains. Completing the TEN-T, including the high-speed lines, will provide better connections along the main corridors. Improving passengers' awareness about their rights and ensuring non-discriminatory provision of travel information, including through-ticket offers, will further boost the rail attractiveness for customers.

33. In 2021, the Commission will propose **an action plan to boost long-distance and cross-border passenger rail services**. This plan will build on efforts by Member States to make key connections between cities faster by better-managed capacity, coordinated timetabling, pools for rolling stock and targeted infrastructure improvements to boost new train services including at night. Platforms or other organisational structures for this purpose should be open to all Member States. Pilot services on some routes involving all interested stakeholders should be supported, and a combination of public service contracts and open access services could test different models for new connections and services, with the aim of boosting 15 pilots by 2030.

[25] Special Eurobarometer 495 showed that the majority of car users are ready to switch to more environmentally friendly forms of transport for their daily mobility. An alternative that is just as fast or a similar price would influence respondents towards a more environmentally friendly solution for long-distance travel.
https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/special/surveyky/2226

[26] For instance, since the high-speed rail line between Barcelona and Madrid opened, the modal split between air and rail has changed from 85% plane/15% train in 2008 to 38% air/62% rail in 2016.

34. The Single European Rail Area needs to be enhanced and the Commission will consider **measures to expand the rail market**[27], addressing the needs of railway undertakings for access to high quality capacity maximising the use of rail infrastructure. **Cross-border tickets should become easier to use and to buy**. Starting in 2021, the Commission will propose regulatory measures to enable innovative and flexible tickets that combine various transport modes and give passengers true options for door-to-door travel.

35. As set out in the 2030 climate target plan, increasing the modal shares of collective transport, walking and cycling, as well as automated, connected and multimodal mobility will significantly lower pollution and congestion from transport, especially in cities and improve the health and well-being of people. **Cities are and should therefore remain at the forefront of the transition towards greater sustainability**. The Commission will further engage with cities and Member States to ensure that all large and medium-sized cities that are urban nodes on the TEN-T network put in place their own sustainable urban mobility plans by 2030. The plans should include new goals, for example on having zero emissions and zero road fatalities. Active transport modes, such as cycling, have seen growth with cities announcing over 2300 km of extra cycling infrastructure. This should be doubled in the next decade towards 5000 km in safe bike lanes. The Commission is also considering developing a mission in the area of Climate-neutral and Smart Cities[28] as a strategic priority for joint action to accomplish decarbonisation within a large number of European cities by 2030.

36. Seamless multimodality enabled by digital solutions is vital in urban and sub-urban areas. Increasing pressure on passenger transport systems has boosted **demand for new and innovative solutions**, with various transport services being integrated into a service accessible on demand, following the Mobility as a Service (MaaS) concept. Simultaneously, many cities are witnessing a shift towards shared and collaborative mobility services (shared cars, bikes, ride-hailing, and other forms of micromobility) facilitated by the emergence of intermediary platforms, thereby enabling the reduction of the number of vehicles in daily traffic.

37. The EU and Member States must deliver on our citizens' expectations of cleaner air, less noise and congestion, and eliminating fatalities on our city streets. By revising the Urban Mobility Package to promote and support these sustainable and healthy transport modes, the Commission will contribute to **the improvement of the current European framework for urban mobility.** Clearer guidance is needed on mobility management at local and regional level, including on better urban planning, and on connectivity with rural and suburban areas, so that commuters are given sustainable mobility options. European policies and financial support should also reflect the importance of urban mobility for the overall functioning of the TEN-T, with provisions for first/last mile solutions that include multimodal mobility hubs, park-and-ride facilities, and safe infrastructure for walking and cycling.

38. The Commission will look into ways to ensure that passenger transport-on-demand (taxis and private hire vehicles) can become more sustainable and deliver efficient services to citizens while maintaining a smoothly functioning single market and addressing social and safety concerns. The Commission will also **help cities modernise their policy toolbox**,

[27] In particular the Commission will assess the interplay among Regulation (EU) No 913/2010 with Directive 2012/34/EU, Regulation (EU) No 1315/2013 and Directive 92/106/EEC.

[28] European research and innovation missions will aim to deliver solutions to some of the greatest challenges facing our world. They are an integral part of the Horizon Europe framework programme beginning in 2021.
https://ec.europa.eu/info/horizon-europe/missions-horizon-europe/climate-neutral-and-smart-cities_en

including in areas such as micromobility, support for the procurement[29] of zero-emission vehicles, including buses and ferries, and associated infrastructure. Better information on low and zero emission zones and common labels as well as digital solutions for vehicles can help maintain a well-functioning single market and ease the exercise of fundamental freedoms.

FLAGSHIP 4 – GREENING FREIGHT TRANSPORT

39. The European Green Deal calls for a substantial part of the 75% of inland freight carried today by road to **shift to rail and inland waterways**. **Short-sea shipping** and efficient zero-emission vehicles can also contribute to greening freight transport in Europe. Urgent action must therefore be taken given the limited progress achieved to date: by way of example, the modal share of rail in inland freight had dropped to 17.9% by 2018[30] from 18.3% in 2011.

40. To support the greening of cargo operations in Europe, the **existing framework for intermodal transport needs a substantial revamp** and must be turned into an effective tool. Options to revise the regulatory framework such as the Combined Transport Directive as well as introducing economic incentives for both operations and infrastructure should be considered. Incentive mechanisms should be based on impartial performance monitoring, according to a European framework to measure transport and logistics emissions.

41. **Multimodal logistics must be part of this transformation**, within and beyond urban areas. The growth of e-commerce has significantly changed consumption patterns, but the external costs of millions of deliveries, including the reduction of empty and unnecessary runs, must be factored in. Hence, sustainable urban mobility planning should also include the freight dimension through dedicated sustainable urban logistics plans. These plans will accelerate the deployment of zero-emission solutions already available, including cargo bikes, automated deliveries and drones (unmanned aircraft) and better use of inland waterways into cities.

42. The **scarcity of transhipment infrastructure**, and of inland multimodal terminals in particular, is pronounced in certain parts of Europe, and should be given the highest priority. Missing links in multimodal infrastructure should be closed. Moreover, the transport system should work more efficiently overall with improved transhipment technologies. The EU needs the multimodal exchange of data, plus smart traffic management systems in all modes. Ultimately all transport modes for freight must come together via multimodal terminals and the Commission will take initiatives so that EU funding and other policies, including R&I support, be geared better towards addressing these issues, while fully respecting the Union's international obligations. The review of the State aid rules for railways, which already provide for a flexible framework to publicly fund multimodality, will further support that objective.

43. In recent years, innovative companies have demonstrated that rail freight can operate reliably and be attractive to customers. However, many domestic rules and technical barriers still hinder performance. **Rail freight needs serious boosting** through increased capacity, strengthened cross-border coordination and cooperation between rail infrastructure managers, better overall management of the rail network, and the deployment

[29] For example the main objective of the Commission's 'Big Buyers for Climate and Environment' initiative is to enhance the uptake of strategic public procurement in Europe through partnership between big public buyers such as cities, regions, hospitals, central purchasing bodies, utilities, etc. working on concrete projects and similar challenges. This objective is achieved by promoting collaboration between big buyers in strategic public procurement with a view to driving the market for innovative goods, services and works.

[30] Around half of total rail freight is cross-border. This lends rail freight a strong European dimension, and makes it even more sensitive to a lack of interoperability and cooperation between national rail networks that can affect its competitiveness. Its traditional cargo, like raw materials, has undergone a massive industrial transformation and the expanding 'just in time' higher value goods need different services.

of new technologies such as digital coupling and automation. The Commission will propose the revision of regulations governing Rail Freight Corridors and the TEN-T core network corridors. Integrating these corridors into 'European transport corridors', focusing on 'quick wins' like train length, loading gauge and improved operational rules, alongside the completion of key missing links and the adaptation of the core network so that it is fully freight capable, will strengthen the infrastructural dimension of our actions to promote intermodal transport. The Commission will propose to improve rules on rail capacity allocation in line with the ongoing project on the timetable redesign, to provide additional, flexible train paths. The implementation of European rules on rail noise will help alleviate related concerns.

44. Similarly, while successive action programmes[31] have helped **inland waterways transport** to largely maintain its modal share[32], actions are necessary to preserve this accomplishment and seize the untapped potential in a sustainable way, both along TEN-T corridors and in those inner cities where inland waterways can green the last mile of city logistics. The Commission will put forward the NAIADES III programme to exploit this potential by tackling the key challenges such as the need to renew barge fleets and to improve access to financing, while ensuring full compliance with environmental policies, in particular with the Water Framework Directive and the Habitats Directive.

45. In addition, TEN-T support for the Motorways of the Sea has succeeded seeing more cargo transported more sustainably, through **short-sea shipping**. The EU must now also lead by example and make European maritime areas sustainable, smart and resilient.

Milestones[33] on shifting more activity towards more sustainable transport modes:

4) *Scheduled collective travel under 500 km should be carbon-neutral by 2030 within the EU.*
5) *Traffic on high-speed rail will double by 2030 and triple by 2050.[34]*
6) *By 2030, there will be at least 100 climate-neutral cities in Europe.*
7) *Rail freight traffic will increase by 50% by 2030 and double by 2050. [35]*
8) *Transport by inland waterways and short sea shipping will increase by 25% by 2030 and by 50% by 2050[36].*

2.3 We need to put in place the right incentives to drive the transition to zero-emission mobility

46. As a third pillar to our approach, **incentives for transport users to make more sustainable choices must be reinforced.** These incentives are mainly economic, namely carbon pricing, taxation, and infrastructure charging, but should be complemented by improved information to users.

FLAGSHIP 5 – PRICING CARBON AND PROVIDING BETTER INCENTIVES FOR USERS

47. Despite longstanding policy commitments for fair and efficient pricing in transport, progress has been limited. The **'polluter pays' and 'user pays' principles** need to be

[31] NAIADES I and II. https://ec.europa.eu/transport/modes/inland/promotion/naiades2_en
[32] Transport by inland waterways increased by 6% between 2005 and 2017.
[33] Taking also into account the analysis presented in the accompanying Staff Working Document, these milestones are set out to show the European transport system's path towards achieving our objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for our future policies.
[34] Compared to 2015.
[35] Compared to 2015.
[36] Compared to 2015.

implemented without delay in all transport modes. Their environment-related external costs alone[37] amount to EUR 388 billion each year. By internalising these external costs, those who use transport will bear the full costs rather than leaving others in our society to meet them and this will trigger a process towards having more sustainable transport modes with lower external costs. **The Commission will therefore pursue a comprehensive set of measures to deliver fair and efficient pricing across all transport modes.** Emission trading, infrastructure charges, energy and vehicle taxes must come together in a mutually compatible, complementary and coherent policy.

48. In particular, **the EU ETS is the most important instrument of carbon pricing** in order to internalise the cost of CO_2 emissions. The Commission will propose to extend the EU Emission Trading System (EU ETS) to the maritime transport sector. For aviation, a proposal will be made to revise the EU ETS Directive, notably to reduce the ETS allowances allocated for free to airlines. As already announced in the European Green Deal, the further expansion of the system could include emissions from road transport and work on an impact assessment is ongoing. EU ETS revenues can be invested in EU R&I to decrease emissions further. The Commission will also propose to implement the ICAO Carbon Offsetting and Reduction Scheme for International Civil Aviation[38] (CORSIA) through revision of the ETS Directive in 2021. At the IMO, the EU will push to advance discussions on market-based instruments as a medium-term measure to implement the greenhouse gas reduction strategy.

49. **Fossil-fuel subsidies should end**. When revising the Energy Taxation Directive, the Commission will aim at aligning taxation of energy products and electricity with EU energy and climate policies. As part of the ongoing impact assessment, it is looking closely at current tax exemptions, including for aviation and maritime fuels, and will make proposal on how best to close any loopholes in 2021. The taxation of energy content for various fuels should be better aligned, and the uptake of sustainable transport fuels better incentivised.

50. **Substantial progress is needed on effective charging for infrastructure use**, notably in road transport. This is key to internalising the cost of damage to infrastructure, but it is also imperative to address the cost of pollution and congestion for society. The Commission strongly urges the European Parliament and the Council to act on the Commission's proposal to amend the Eurovignette Directive, living up to the ambitions of the European Green Deal. Smart, distance-based road charging, with varied rates for the type of vehicle and the time-of-use, is an effective tool to incentivise sustainable and economically efficient choices, manage traffic and reduce congestion.

51. Currently, neither individuals planning a trip, nor shippers/logistics operators organising a delivery, give sufficient consideration to environmental footprint. This is partly because they are not given the **right information**, including on available alternatives. **The most sustainable choice should be clearly indicated**. With adequate information on the environmental footprint and a more systematic opportunity for consumers to voluntarily offset their travel, consumers and businesses will be empowered to make more sustainable delivery and transport choices.

[37] The study, Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities (June 2019), covered direct CO2 and air pollutant emissions, indirect CO2 and air pollutant emissions from energy production, air pollution and excessive noise and habitat damage. Total taxes and charges collected from the sector are estimated to amount to at least EUR 340 billion. According to the study, the delay costs due to congestion amount to an additional EUR 228 billion. The external costs of road crashes were estimated to reach EUR 250 billion. The study also estimated total infrastructure costs to be EUR 256 billion. For ports and airports, total taxes and infrastructure cost cover only the main ones. These are all figures for EU27.
Source: Study Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities (June 2019)
https://ec.europa.eu/transport/themes/sustainable/internalisation-transport-external-costs_en

[38] https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx

52. This is why the Commission plans to **establish a European framework for the harmonised measurement of transport and logistics greenhouse gas emissions**, based on global standards, which could then be used to provide businesses and end-users with an estimate of the carbon footprint of their choices, and increase the demand from end-users and consumers for opting for more sustainable transport and mobility solutions, while avoiding greenwashing. Information on the carbon footprint of a specific journey could become a new passenger right and in this case should apply to all transport modes.

53. Our ability to reduce the environmental impact depends for a substantial part on our choices. The **European Climate Pact** will display and support the many options citizens have for moving around efficiently and in healthier, less polluting ways. It shall play an important role in raising awareness about, foster engagement towards zero-emission mobility and push for action in greening mobility strategies of companies and cities.

Milestones[39] *on internalising the external costs of transport, including via the EU ETS:*

9) *By 2030, rail and waterborne-based intermodal transport will be able to compete on equal footing with road-only transport in the EU*[40].
10) *All external costs of transport within the EU will be covered by the transport users at the latest by 2050.*

3 SMART MOBILITY – ACHIEVING SEAMLESS, SAFE AND EFFICIENT CONNECTIVITY

54. People should enjoy a seamless multimodal experience throughout their journey, through a set of sustainable mobility choices, increasingly driven by digitalisation and automation. As innovation will shape the mobility of passengers and freight of the future, the right framework and enablers should be in place to facilitate this transition that can make the transport system much more efficient and sustainable.

55. Public and social acceptance is key for a successful transition, which is why European values, ethical standards, equality, data protection and privacy rules, among others, will be fully respected and at the heart of these efforts, and cybersecurity will be treated with high priority.

FLAGSHIP 6 – MAKING CONNECTED AND AUTOMATED MULTIMODAL MOBILITY A REALITY

56. **The EU needs to take full advantage of smart digital solutions and intelligent transport systems (ITS)**. Connected and automated systems have enormous potential to fundamentally improve the functioning of the whole transport system and contribute to our sustainability and safety goals. Actions will focus on supporting the integration of transport modes into a functioning multimodal system.

57. Europe must seize the opportunities presented by **connected, cooperative, and automated mobility** (CCAM). CCAM can provide mobility for all, give back valuable time and improve road safety. The Commission will drive research and innovation, possibly with a new European partnership on CCAM envisaged under Horizon Europe and through other partnerships focusing on digital technologies. Such partnerships are important when it comes to developing and implementing a shared, coherent and long-term European research and innovation agenda, by bringing together actors from the entire value chain. The EU needs to make sure that efforts are well coordinated, and that results reach the

[39] Taking also into account the analysis presented in the accompanying Staff Working Document, these milestones are set out to show the European transport system's path towards achieving our objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for our future policies.
[40] In terms of the share of external costs internalized.

market. For instance, the lack of harmonisation and coordination of relevant traffic rules and liability for automated vehicles needs to be addressed. The vision is to make Europe a world leader in the development and deployment of CCAM services and systems and thereby provide a significant contribution to European leadership in safe and sustainable road transport.[41]

58. The Commission will explore options **to further support safe, smart and sustainable road transport operations** under an existing agency or another body. This body could support the deployment and management of ITS and sustainable connected and automated mobility across Europe. It could facilitate the preparation of relevant technical rules, including as regards the use of automated vehicles cross-border and on the deployment of recharging and refuelling infrastructure, provided for in Union legislation and to be adopted by the Commission. Such rules would in turn create synergies across Member States. It could for example prepare drafts of roadworthiness inspection methods and carry out other specific road safety tasks, as well as collect relevant data. It could also accomplish specific tasks in the area of road transport in the face of major disruptions like the COVID-19 pandemic, where emergency measures and solutions such as Green Lanes[42] have been necessary.

59. **Planning and purchasing tickets for multimodal journeys** is cumbersome, as a conducive framework for EU-wide, integrated, multimodal information, ticketing and payment services is lacking. Addressing this will involve overcoming the insufficient availability and accessibility of data, sub-optimal cooperation between suppliers and vendors, the absence of digital tickets in some cases, inadequate payment system interoperability, and the existence of different licencing and distribution agreements. The EU needs to transform its legal framework to support multimodal travel information, booking and ticketing services, while at the same time looking at the rights and obligations of online intermediaries and multimodal digital service providers selling ticketing and/or mobility services. The Commission will examine whether data sharing, including on fares, in road and rail passenger transport services, and selling arrangements are fit for purpose. Meanwhile, smart and interoperable payment services and tickets require further development; making them a standard requirement in any relevant public procurement contract would promote greater use.

60. The vision of a seamless travel experience and the digitalisation of information exchange is particularly relevant for land transport. **Future mobility should offer paperless options in all modes**, for professionals and individual drivers alike. Digital certificates for drivers and vehicles and freight transport information, including in the form of electronic consignment notes, easy and affordable use of cross-border car rentals, contactless payments for parking and tolls, and better information about areas in which cities or local authorities restrict car use to tackle congestion or improve air quality would all contribute to a smoother driving experience. Availability of electronic certificates and freight transport information would also facilitate digital enforcement, while real time tracking and tracing of goods would be a significant step towards the completion of the Digital Single Market, the real time economy and green transition.

61. To create a truly smart transport system, **efficient capacity allocation and traffic management** must also be addressed to avoid a capacity crunch and reduce CO_2 emissions.

[41] Other partnerships focusing on the core issues of data portability should protect the users and offer them clear and transparent view on how the data can be used or transferred.

[42] C(2020) 1897 final Communication "on the implementation of the Green Lanes under the Guidelines for border management measures to protect health and ensure the availability of goods and essential services" and COM(2020) 685 final Communication "upgrading the transport Green Lanes to keep the economy going during the COVID-19 pandemic resurgence"

The roll out of the European Rail Traffic Management System (ERTMS) and the Single European Sky remains a priority for the Commission and for Next Generation EU: investments in its deployment count fully for the digital spending targets and substantially towards the climate spending targets. Further efforts to develop train automation as well as air traffic management (ATM) systems are needed, for instance through joint undertakings (JUs). The Commission is considering such JUs for Horizon Europe (e.g. Shift2Rail (S2R) and the SESAR Joint Undertakings) and other future partnerships under that programme. Further development of Vessel Traffic Monitoring and Information Systems (VTMIS) will facilitate safe deployment of automated and autonomous maritime operations.

62. For rail automation and traffic management to become a reality on cross border main lines, the Commission will propose to **update technical specifications for interoperability (TSIs)** to encompass new technologies like 5G and satellite data, and provide a readily upgradeable and common system architecture. This is needed so that the ERTMS can be at the heart of a digital rail system.[43]

63. As for aviation, improving the efficiency of air traffic management (ATM) holds great potential for modernisation and sustainability, helping to cut excess fuel burn and CO_2 emissions caused by flight inefficiencies and airspace fragmentation[44]. **Completing and effectively implementing the Single European Sky** (SES) will also ease the travelling experience: a modernised regulatory framework and digital ATM infrastructure will help reduce bottlenecks, enabling flights to depart and arrive more punctually. The legislative process on the SES should therefore be completed without delay.

FLAGSHIP 7 – INNOVATION, DATA AND ARTIFICIAL INTELLIGENCE FOR SMARTER MOBILITY

64. **Proactively shaping our future mobility by developing and validating new technologies and services is key to staying ahead of the curve**. The EU will therefore put in place favourable conditions for the development of new technologies and services, and all necessary legislative tools for their validation. We can expect the emergence and wider use of drones (unmanned aircraft) for commercial applications, autonomous vehicles, hyperloop, hydrogen aircraft, electric personal air vehicles, electric waterborne transport and clean urban logistics in the near future. An **enabling environment for such game-changing mobility technologies is key,** so that the EU can become a prime deployment destination for innovators. Start-ups and technology developers need an agile regulatory framework to pilot and deploy their products. The Commission will work towards facilitating testing and trials, and towards making the regulatory environment fit for innovation, so as to support the deployment of solutions on the market.

65. The Commission will **drive the research and deployment of innovative and sustainable technologies in transport**. Investment in disruptive solutions will pave the way for important breakthroughs and environmental gains in the years and decades to come. Today's EU research programmes will be crucial for tomorrow's deployment, through instruments like the Connecting Europe Facility (CEF), the Cohesion Fund, the European Regional Development Fund or InvestEU.

66. The **Commission fully supports the deployment of drones and unmanned aircraft**, and will further develop the relevant rules, including on the U-space, to make it fit for enhancing safe and sustainable mobility. The Commission will also adopt a 'Drone Strategy 2.0' setting out possible ways to guide the further development of this technology and its regulatory and commercial environment.

[43] This will help accelerate the digitalisation of rail operations with the Future Railway Mobile Communication System (FRMCS) and the implementation of the "Gigabit Train" concept.

[44] This can reduce up to 10% of air transport emissions and also ATM could help to address the non-CO_2 climate impacts of aviation.

67. Furthermore, in order to make the digital transformation of the transport sector a reality, **the EU needs to ensure that the key digital enablers are in place**, including electronic components for mobility, network infrastructure, cloud-to-edge resources, data technologies and governance as well as Artificial Intelligence. The EU should further strengthen its industrial capacities related to the digital supply chain. This includes the design and production of components, software platforms and the Internet of Things technology for a further electrification and automation in transport and mobility.[45]

68. The EU also needs to ensure **the highest level and performance of digital infrastructure**, notably through **5G,** which offers a wide range of services and helps to reach higher levels of automation across different mobility applications. In addition, further efforts are needed to achieve the objective of uninterrupted coverage across the major transport corridors across Europe with 5G connectivity infrastructure, as set out in 2016 5G Action Plan[46]. Having a digital single market that functions well is key.

69. **Artificial Intelligence** (AI) is becoming essential for transport automation in all modes, with digital technologies and components at their core. The Commission envisions an AI ecosystem of both excellence and trust, which will be shaped with the funding of research, innovation and deployment through Horizon Europe and Digital Europe programmes. In this context, the Commission will support testing and experimentation facilities on AI for smart mobility under the Digital Europe Programme.

70. The digital transformation of the transport and mobility sector requires further efforts related to **data availability, access and exchange.** Currently, they are often hampered due to unclear regulatory conditions, a lack of an EU market for data provision, the absence of an obligation to collect and share data, incompatible tools and systems for data collection and sharing, different standards, or data sovereignty concerns. The availability of data and statistics is also essential, in particular real time data, as it enables better services to citizens or transparency of supply chains in freight transport.

71. That is why the Commission will propose further actions to **build a European Common Mobility Data Space.** It will take into consideration the horizontal governance set out in the data strategy[47] and the Data Act and the principle of technology neutrality. The aim is to collect, connect and make data available to meet EU objectives, from sustainability to multimodality. This Mobility Data Space should function in synergy with other key systems, including energy, satellite navigation and telecommunications, while being cyber safe and compatible with Union data protection standards. At the same time, a level playing field for data in the value chain must be preserved so that innovation can thrive and new business models emerge. The Commission will consider different regulatory options to give operators a safe and trustworthy space to share their data within and across sectors, without distorting competition and while respecting privacy and the Union's international obligations.

72. As access to vehicle data will be instrumental for transport data sharing and smart mobility, the Commission will propose, in 2021, a new initiative on access to car data, through which it will propose a balanced framework guaranteeing fair and effective access to vehicle data by mobility service providers.

[45] The EU will reinforce its support to the field through the Key Digital Technologies Joint Undertaking and the support to low power consumption and secure processor technologies.
[46] COM(2016)588 final, "5G for Europe: An Action Plan"
[47] COM (2020) 66 final, "A European strategy for data"

Milestones[48] *towards smart mobility:*

11) By 2030, seamless multimodal passenger transport will be facilitated by integrated electronic ticketing and freight transport will be paperless.

12) By 2030, automated mobility will be deployed on large scale.

4 RESILIENT MOBILITY – A MORE RESILIENT SINGLE EUROPEAN TRANSPORT AREA: FOR INCLUSIVE CONNECTIVITY

73. **Transport has been one of the sectors hit hardest by the COVID-19 pandemic**[49], with damage stemming from the huge negative demand shocks following the necessary containment and mitigation measures. This has given rise to supply chain disruptions, steep reductions in foreign and domestic travel and tourism, and reduced connectivity across the EU as a whole. This has also resulted in immense operational and financial difficulties for many businesses active in the transport sector, many of them small and medium-sized enterprises (SMEs). **This strategy must help the sector and relevant ecosystems such as travel and tourism bounce back better from this crisis and become greener, smarter and more resilient**.

FLAGSHIP 8 – REINFORCING THE SINGLE MARKET

74. **The EU has now an opportunity to build a mobility system that is sustainable, smart, and resilient: a system for future generations.** The Commission's previous assessment showed the need for investments at scale and at speed, including substantial public and private investments at national level: the additional investments for 2021-2030 in vehicles (including rolling stock, vessels, and aircraft) and renewable and low carbon fuels infrastructure deployment are estimated at EUR 130 billion per year, compared to the previous decade[50]. The 'green and digital transformation investment gap' for infrastructure would add an additional EUR 100 billion per year[51]. Just to complete the TEN-T core network and build it as a truly multimodal system, EUR 300 billion is needed over the next 10 years. These **investments are key to reinforce the single market**.

75. **Investment must be coordinated and prioritised within EU funding programmes**, including the NextGenerationEU recovery instrument, along the following principles. Firstly, non-repayable support, notably from the new Recovery and Resilience Facility, ERDF and Cohesion Fund, Innovation Fund, should be prioritised for projects with the highest social, environment, economic and EU added value and direct impact on jobs, growth and resilience. The CEF is the main instrument to finance infrastructure development with maximum EU-added value, while mainstreaming the green and digital objectives. Second, the market failure and sub-optimal investment level in policy priority areas should be addressed through financing instruments, notably through the Sustainable Infrastructure and Research, Innovation and Digitalisation Windows of the InvestEU Programme, complemented, where necessary with further use of blending instruments. Third, the transport lending policy of the EIB should also help achieve the strategy's objectives, by offering a comprehensive framework that will attract private investment to

[48] Taking also into account the analysis presented in the accompanying Staff Working Document, these milestones are set out to show the European transport system's path towards achieving our objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for our future policies.

[49] For example, in May 2020, the impact was of approximately -90 % of air traffic compared to a year ago (Source: Eurocontrol), -85 % long-distance rail passenger service, -80 % on regional rail passenger services (including sub-urban), near standstill on international rail passenger services (Source: CER); more than -90 % for cruise and passenger ships in mid-April compared to a year ago (Source: EMSA)

[50] COM (2020) 562 final, "Stepping up Europe's 2030 climate ambition - Investing in a climate-neutral future for the benefit of our people"

[51] SWD (2020) 98 final, based on TEN-T related estimates and EIB calculations. This estimate does not include the costs of equity repairs, or that of the regular renewal of the fleet, which however may be delayed due to the impact of the COVID-19 pandemic on transport companies.

improve resilience and accelerate the deployment of sustainable and smart technologies in all modes.

76. Investment in the recovery of the transport sector should be accompanied by **investments by businesses in more sustainable and digital mobility**. The technical screening criteria based on the Taxonomy Regulation[52] should be defined for all transport modes while recognising the specific investment needs. Financing sustainable transport investment could also build on the upcoming European Green Bonds Standard anchored on the EU taxonomy. The upcoming revision of the transport relevant State aid rules must also be used to drive the sector's transition to sustainability, giving all modes an increasing opportunity to compete on equal terms for a subsidy.

77. To build a credible pipeline of viable projects and accelerate investment, advisory **support for public authorities and project promoters** is needed. This can be provided through the Technical Support Instrument and the InvestEU Advisory Hub, as well as through technical assistance available within programmes financed under cohesion policy.

78. **SMEs[53] need easier access to finance,** notably for fleet renewals and other innovative and green investments. This can be achieved through clearer communication and guidance, dedicated administrative support, and simplified financial support schemes. Support for the creation of pooling, funds and other intermediation mechanisms will ensure a critical mass for access to finance. Member States should designate a one-stop shop for businesses to request such support.

79. Investment in **transport infrastructure** across the EU is key to ensuring connectivity, the sustainable functioning of the economy and cohesion among Member States. This is why a review of the European economic governance framework is now necessary: the EU must promote transport investment based on an EU infrastructure asset class. Such a class could comprise infrastructure projects whose implementation is based on European strategic planning, such as the TEN-T projects. The Commission will equally ensure that the new TEN-T Guidelines are consistent with the 'do no significant harm' principle and with the European Green Deal. Infrastructure must also be adapted to climate change and made resilient to disasters, and the Commission will address this issue both in the TEN-T review and the climate adaptation strategy, including through dedicated guidance on the climate proofing.

80. **All necessary steps must be taken to complete the TEN-T on time.** The Commission will propose to reinforce the role of the European Coordinators to drive progress on transport corridors across the continent to seek their completion by 2030. The EU must prioritise the closing of the East-West and North-South divides for modern infrastructure. The successes of the Øresund bridge between Denmark and Sweden and the high-speed rail network between Paris-London-Brussels-Amsterdam and Cologne demonstrate the need to complete projects like Rail Baltica, Lyon-Torino, Y-basque, Fehmarn, Brenner, Dresden-Prague, Vienna-Bratislava-Budapest, Seine-Scheldt and many others, without delay. More cross-border projects will be needed to integrate all Member States into the European rail system of the future, in turn establishing smooth interconnections for cross-border rail travel across Europe. This will be achieved while maintaining accessibility for rural and remote regions.

[52] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, OJ L 198, 22.6.2020, p. 13.

[53] There were more than 1.1 million enterprises in the EU-27's transportation and storage services sector in 2017, employing 8.1 % of the total number of persons working in the non-financial business economy. More than half of them are employed by SMEs.

81. At the same time, **investment must finance the modernisation of fleets in all modes**. This is necessary to ensure that low and zero emission technology options are deployed, including through retrofitting and appropriate renewal schemes in all transport modes. Increased use of joint and cross-border public procurement within the EU, based on the Most Economically Advantageous Tender principle, can contribute to doing this cost-efficiently. Support for such fleet renewals, while provided in line with the EU's international obligations on subsidies and with EU State aid rules, will help to preserve a thriving manufacturing ecosystem in areas where Europe has a strategic technological advantage such as the aircraft, train and vessel manufacturing industries. This would increase the prospects of adequate production capacities and supply value chains being built up within the European manufacturing industry in line with the New Industrial Strategy for Europe[54], and of preserving the technological leadership of the EU's manufacturing base.

82. Building on the success of the European Battery Alliance[55], **the Commission supports strategic value chains (including on batteries, raw materials, hydrogen and renewable and low-carbon fuels)**[56] with regulatory and financial instruments. This is essential to ensuring secure supply of materials and technologies indispensable for sustainable and smart mobility, avoiding Europe's dependence on external suppliers in strategic sectors to achieve greater strategic autonomy. Europe needs to capitalise on its space assets that provide satellite services, data, and communications across all modes of transport and are particularly critical for CCAM.

83. The Single European Transport Area is more integrated than ever before, but it is still far from complete. **Obstacles to the free movement of goods and services remain**, as do obstacles to fair competition, while relevant rules are not implemented or properly enforced in a timely manner.

84. The COVID-19 pandemic has shed light on the vulnerabilities of the single market. Uninterrupted land, waterborne and air cargo services are of crucial importance for the transport of goods and inputs to manufacturing industries, the functioning of the EU's single market, and the EU's effective response to the current and future crises. Efforts to ensure multimodality and interoperability between different modes should be stepped up, and the **completion of the Single European Transport Area must be accelerated**.

85. The integrity of the single market and a level playing field for operators must be maintained, including by ensuring that there is no discrimination among incumbents and new market entrants, for instance when granting State aid, and that no new barriers for competition are introduced. The **Commission will rigorously pursue the enforcement of EU rules**, and will review or propose, as necessary, legislation to remove obstacles to the free movement of goods and services affecting transport. While doing so the Commission will seek to improve the efficiency of the transport system and transport operations, for example by aiming to reduce empty runs, thus avoiding harmful emissions and pollution.

86. To achieve all the goals in this strategy, support for modernisation efforts is needed in every mode to provide EU citizens with smart connectivity at affordable and transparent prices. In aviation, the Commission will propose to **revise the Air Services Regulation**[57]. While maintaining the highest levels of air safety, the objectives will be to protect

[54] COM (2020) 102 final, "A New Industrial Strategy for Europe"
[55] The European Battery Alliance established in 2017 gathers over 500 actors with over € 100 bn of combined investments announced along the EU value chain.
[56] https://www.eba250.com/; https://erma.eu/; https://ec.europa.eu/growth/industry/policy/european-clean-hydrogen-alliance_en
[57] Regulation No 1008/2008 of the European Parliament and of the Council of 24 September 2008 on common rules for the operation of air services in the Community

consumer interests, to shape a resilient and competitive European air services industry while preserving high quality employment. The modernisation of EU rules governing airport charges, slots and computer reservation systems will complement this initiative. In rail, the Commission will assess whether current **rules on track access charges** offer the right incentives to boost competitive markets and the attractiveness of rail.

87. To avoid future disruptions, in response to the call by the Council, the **Commission will prepare crisis contingency plan(s)**, bringing together EU and Member State authorities with sector representatives. Its objective would be to ensure business continuity, and coordinate response measures in the transport sector on the basis of guidelines and legislation developed during the COVID-19 pandemic, such as for the Green Lanes[58]. With a view to further ensuring uninterrupted freight transport operations and passenger transport services in crisis scenarios, the Commission will assess the possibilities of providing for new health-safety and operational measures, and of setting out a harmonised minimum level of essential transport services. The EU may also need to adapt existing transport legislation to allow for a swift response to crises.

FLAGSHIP 9 – MAKING MOBILITY FAIR AND JUST FOR ALL

88. The economic shock has highlighted the need for **affordable, accessible and fair mobility** for passengers and other users of transport services. Indeed, whereas the single market in transport has increased connectivity, mobility remains expensive for people with low disposable income, and not sufficiently accessible for people with disabilities or reduced mobility, and those with low IT-literacy. In rural, peripheral and remote areas, including the outermost regions and islands, improved public transport links will be essential to guarantee unhindered access to mobility for all.

89. The shift towards sustainable, smart and resilient mobility must be just or else risks not taking place. The Commission will therefore ensure that possibilities under **the just transition mechanism are fully explored to make this new mobility affordable and accessible in all regions and for all passengers including those with disabilities and reduced mobility**. The Commission will also continue to help by providing support from the Cohesion Fund and ERDF in less developed Member States and regions.

90. In addition, PSOs should be even more targeted and efficient and, where possible, serve the shift to a multimodal system. To guarantee the best use of public money and support, national and local authorities need to be able to **utilise PSOs to improve connectivity** and to reflect specific policy objectives. This could be achieved through sustainability criteria for PSOs, such as a criterion whereby PSOs for short-haul flights cannot be imposed where an alternative, suitable, more sustainable and competitive link exists. The Commission will consider options to bring about a multimodal PSOs system, notably with a view to allowing all transport modes to compete on an equal footing to fulfil relevant transport needs.

91. Fair mobility also means **protection for passengers and their rights**. The mass cancellations during the COVID-19 pandemic showed the importance of EU-wide rules and their uniform implementation and enforcement. The EU must help passengers when transport operators go bankrupt or are in a major liquidity crisis as in the context of COVID-19 pandemic. Stranded passengers need to be repatriated and their tickets have to be reimbursed in case of cancellations by carriers. The Commission considers options and benefits of possible means that protect passengers against such events and will, if appropriate, make legislative proposals.

[58] C(2020) 1897 final Communication "on the implementation of the Green Lanes under the Guidelines for border management measures to protect health and ensure the availability of goods and essential services" and COM(2020) 685 final Communication "upgrading the transport Green Lanes to keep the economy going during the COVID-19 pandemic resurgence"

92. EU passenger rights should be better implemented, clearer for both carriers and passengers, offer adequate assistance, reimbursement, possibly compensation when disruptions arise, and appropriate sanctions if the rules are not properly applied. The Commission will consider options and benefits to go further with a **multimodal framework for passenger rights** that is simplified, more consistent and harmonised.

93. The sector's most valuable asset by far is its people and the sustainable and smart transition will not be possible without the support and buy-in of **transport workers**. However, certain parts of the transport sector often suffer from harsh working conditions. Precarious working conditions, including long working hours, periods spent away from home and low paid work, are exacerbated by a lack of respect for, and proper enforcement of, applicable labour standards. Providing higher social standards would contribute directly to reverse the current general lack of attractiveness of the sector. The workforce is rapidly ageing and significant shortages of labour force are already very visible in certain occupations[59]. The issues faced by the transport workers have been exacerbated by the COVID-19 pandemic. This situation risks deteriorating further if no action is taken.

94. This is why the Commission will consider **measures across the different modes of transport to strengthen the legislative framework on conditions for workers**, and ensure the correct implementation and give more clarity on the applicable social rights in line with the various instruments available to implement the European Pillar of Social Rights. The Commission will seek to promote high social standards, including in the aviation sector that faces specific challenges, and will work with the European Labour Authority to support Member States in enforcing the relevant legislation. In the international domain, the Commission will push for progress in the context of the IMO, the International Labour Organization and other international institutions to ensure decent working and living conditions on board and timely crew changes, in particular during a global pandemic.

95. Changes in the sector, in particular those relating to automation and digitalisation, are creating many new challenges. Jobs in the transport sector, especially low- and medium-skilled jobs, may be at **risk due to automation and moves towards greater sustainability**. At the same time, the ongoing digital transformation presents new opportunities, such as an improved working environment and quality jobs that could become more attractive for women and young people. Therefore, a credible path is needed for the **just transition for transport workers**. The Commission will issue recommendations for the transition to automation and digitalisation and on means to mitigate their impact on the transport workforce.

96. Finally, in order to address the growing shortage of skilled workers, the Commission is calling on transport stakeholders and social partners to contribute to the implementation of the European **Skills** Agenda for sustainable competitiveness, social fairness and resilience[60] and in particular to join the Pact for Skills[61]. Transport stakeholders should also create further apprenticeships, to become members of the European Alliance for Apprenticeships, and to participate actively in the European Vocational Skills Week.

97. The Commission will duly apply **equality mainstreaming** to its transport related policy initiatives and continue to support stakeholder cooperation and exchange of good practices on the "More Women in Transport – Platform for Change", to increase the number of

[59] For example, the International Road Transport Union reported in 2019 that a fifth of driver positions are unfilled in the European road transport sector.
[60] COM (2020) 274 final, "European Skills Agenda for sustainable competitiveness, social fairness and resilience (2020)"
[61] The Commission will take into account the experience of the recently launched Automotive Partnership as part of the Pact for Skills, to help the industry manage the up- and re-skilling challenges it faces during the green and digital transition.

women in transport professions. It will also raise awareness on equality issues by setting up and supporting a network of Diversity Ambassadors. Any future proposal for transport will be compliant with the Commission's Gender Equality Strategy[62] and Disability Strategy[63].

FLAGSHIP 10 – ENHANCING TRANSPORT SAFETY AND SECURITY

98. The **safety and security** of the transport system is paramount and should never be compromised and the EU should remain a world leader in this field. Continuous efforts with international, national and local authorities, stakeholders, and citizens is key if we are to meet our goal of zero fatalities from mobility.

99. **Europe remains the safest transport region in the world.** While air, sea and rail travel are very safe, there is no room for complacency, particularly on road safety. Some 22 700 people lost their lives on EU roads in 2019, and for every person killed, around five more suffer serious injuries with life-changing consequences. The Commission therefore remains fully committed to implementing the EU road safety strategy of 2018[64].

100. **Factors such as speed, alcohol and drug consumption, and distractions while driving** are strongly correlated with both causation and severity of road crashes. The Commission will consider what action is warranted to tackle these issues, for instance through further use of EU recommendations. Protecting vulnerable road users will be a priority, as will better data collection and analysis, and the Commission will also assess the added value of in-depth crash investigation at this level. The upgrading of existing high-risk infrastructure should remain a priority for infrastructure investments, with a particular attention on ageing and underdeveloped network segments. Measures to give more space to various forms of active mobility will help prevent deaths and serious injuries for vulnerable road users.

101. In the maritime sector, the Commission is planning to initiate a major review of existing legislation on **flag state responsibilities, port state control and accident investigation**, together with the continued strengthening of EU rules on recognised organisations. The overall objective is to enable safe, secure and efficient maritime transport with lower costs for businesses and administrations. Maritime safety and smart and sustainable shipping in EU waters will continue to rely on the contribution of the European Maritime Safety Agency whose mandate should be modernised and possibly extended to additional areas.

102. Alongside other efforts to make the transport sector and related infrastructure more resilient, the EU will **update and improve the existing security framework**, including tackling cyber threats, under the overarching umbrella of the existing rules governing this matter[65]. Building upon the EU wide certification framework for ICT products, processes and services, and the designation of "Operators of Essential Services" (OES) for mobility infrastructures, the option of setting up an EU-level rapid alert mechanism for security will be explored. In addition, related regulations will be improved, such as on the cybersecurity certification framework for automated vehicles.

Milestones[66] towards resilient mobility:

[62] COM (2020) 152 final, "A Union of Equality: Gender Equality Strategy 2020-2025"
[63] COM (2010) 636 final, European Disability Strategy (2010-2020). The Commission will present a strengthened strategy for disability in 2021, building on the results of the ongoing evaluation of the European Strategy for Disability 2010-2020."
[64] COM(2018) 293 final, "Sustainable Mobility for Europe: safe, connected, and clean"
[65] Directive (EU) 2016/1148, Directive on security of network and information systems (NIS Directive), Regulation (EU) 2019/881, Cybersecurity Act, and the Directive on European critical infrastructure protection (Directive 2008/114/EC)
[66] Taking also into account the analysis presented in the accompanying Staff Working Document, these milestones are set out to show the European transport system's path towards achieving our objectives of a sustainable, smart and resilient mobility, thereby indicating the necessary ambition for our future policies.

13) *A multimodal Trans-European Transport Network equipped for sustainable and smart transport with high speed connectivity will be operational by 2030 for the core network and by 2050 for the comprehensive network.*
14) *By 2050, the death toll for all modes of transport in the EU will be close to zero.*

5 THE EU AS THE WORLD'S CONNECTIVITY HUB

103. In view of rapidly changing geopolitical developments, the EU needs to act to safeguard and further EU interests. For all transport modes with an international dimension, **ensuring undistorted international competition, reciprocity and a level playing field is essential**. To address, effectively, the distorting effects of foreign subsidies in the internal market, including in public procurement, the Commission will propose a dedicated instrument[67].

104. Further action could include the use, by Member States, of available mechanisms for the screening of foreign direct investments into European transport companies and assets on the grounds of security or public order. It could also include changes, on the Union's part, in respect of trade defence, in light of criteria in place for aviation. The Commission will also continue **to promote the use of European technical, social, environmental and competition standards** in international fora, and in relations with individual non-EU countries across transport modes. Transport equipment and solutions are the engine of European exports and the sustainable and smart transformation of the sector is an opportunity for our manufacturing industry to lead globally.

105. To achieve the goals of the Paris Agreement, a significant reduction in transport emissions is needed by 2050 beyond the EU as well. It is therefore crucial that **the European Green Deal and this strategy are well reflected in our external actions**, that global action towards sustainable and smart mobility is widely promoted to achieve the Sustainable Development Goals, and that policy coherence is ensured when projecting internal EU policies outside the EU. Accordingly, various strands of action for translating good practices, quality solutions and standards on sustainable and smart mobility into the EU development cooperation will be developed, including with our African partners[68], while taking into account the specific challenges and constraints of emerging and development countries.

106. The EU will **continue to deepen transport relations,** including with key strategic partners and international organisations, and will further develop links with new international partners, such as high-growth and emerging economies. This is paramount for sectors that need a global level playing field, such as aviation and maritime. The Commission will seek authorisations from the Council to open negotiations for new air transport agreements with third countries, and will explore options for appropriate action as regards maritime transport relations with third countries and regions. The EU should also strive, within IMO, ICAO and other international organisations, for high standards, including in the field of safety, security, and environmental protection, notably climate change.

107. Transport is a key component of policies and instruments supporting the enlargement process to the Western Balkans and the **EU neighbourhood policy**, including the Eastern Partnership and Southern Neighbourhood. The Commission will strengthen the link between transport and neighbourhood policies in key areas, and will develop a comprehensive approach to connectivity with neighbouring countries, including by

[67] COM(2020) 253 final "White Paper on levelling the playing field as regards foreign subsidies"
[68] JOIN(2020) 4 final, Towards a comprehensive Strategy with Africa

working closely with the Transport Community, extending the TEN-T, providing technical support and cooperation, and concluding new sectoral agreements.

108. To achieve the EU's international ambitions and priorities in the field of transport, it is important to mainstream transport policies in the EU external dimension and act on the international stage, with a **strong, unified and coherent voice**. It is to be recalled in that respect that this requires all Union institutions and Member States to fully apply the provisions of the Treaties, in particular those on the negotiation and the conclusion of new transport agreements and those on the representation in international fora, such as the ICAO and the IMO, as the Lisbon Treaty was precisely designed to make the Union more effective in its external relations.

6 CONCLUSIONS

109. The recovery from the crisis caused by the COVID-19 pandemic should be used to accelerate the decarbonisation and modernisation of the entire transport and mobility system, limiting its negative impact on the environment and improving the safety and health of our citizens. **The twin green and digital transitions should reshape the sector, redraw connectivity and re-energise the economy**. The Commission acknowledges that this transformation – which needs to be socially fair and just – will not come easily, and will require the full dedication and support from all transport actors, as well as a substantial increase of growth-generating investment from public and private sectors.

110. The sustainable European transport system that the EU strives for must be smart, flexible and adaptable to ever-changing transport patterns and needs, based on cutting-edge technological advancements to provide seamless, safe and secure connectivity to all European citizens. **Transport should showcase European ingenuity and industriousness – standing at the vanguard of research, innovation and entrepreneurship, and driving the twin transitions**.

111. The Commission is putting forward a comprehensive set of measures listed in this strategy's action plan to put the EU on the path to creating the sustainable, smart and resilient mobility system of the future and bringing about the fundamental changes needed to achieve the objectives of the European Green Deal. These efforts can only be successful if there is sufficient commitment by all those concerned, namely European institutions, Member States and their authorities at all levels of government, stakeholders, businesses as well as citizens.

EUROPEAN
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Brussels, 9.12.2020
COM(2020) 789 final

ANNEX

ANNEX

to the

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Sustainable and Smart Mobility Strategy – putting European transport on track for the future

{SWD(2020) 331 final}

ACTION PLAN [1]

SUSTAINABLE MOBILITY	
FLAGSHIP 1 - BOOSTING UPTAKE OF ZERO-EMISSION VEHICLES, RENEWABLE & LOW-CARBON FUELS AND RELATED INFRASTRUCTURE	
1. Revision of the recast Renewable Energy Directive	2021
2. Adopt relevant implementing legislation under the recast Renewable Energy Directive setting out methodologies for measuring GHG emissions savings and promotion of renewable and low-carbon fuels	2021
3. Revision of the CO_2 emission performance standards for cars and vans, for lorries and put in place CO_2 emission performance standards for buses	2021-2022
4. Revision of the Weights and Dimensions Directive	2022
5. Explore the benefits of retrofitting and renewal schemes in various transport modes	2021
6. Propose post-Euro 6/VI emission standards for cars, vans, lorries and buses	2021
7. Improve emissions testing in roadworthiness checks	2023
8. Develop coherent rules for environmental, energy and safety performance of tyres	2023
9. Foster development of energy efficiency and alternative fuel measures at IMO	2021
10. Revision of the Alternative Fuels Infrastructure Directive[2] and a roll-out plan with funding opportunities and requirements	2021
11. Revision of the Energy Performance of Buildings Directive including enhanced provisions on charging infrastructure for e-mobility	2021
FLAGSHIP 2 - CREATING ZERO-EMISSION AIRPORTS AND PORTS	
12. Launch FuelEU Maritime – Green European Maritime Space[3] and ReFuelEU Aviation – Sustainable Aviation Fuels	2021
13. Consider to establish the Renewable and Low-Carbon Fuels Value Chain Alliance[4]	2021
14. Revision of the Ship-source pollution Directive	2022
15. Revision of the EU Ship Recycling Regulation[5]	2023
16. Revision of the Airport Slots Regulation[6] and the Airport Charges Directive[7]	2021-2022
17. Establish sustainable taxonomy criteria for all modes[8]	2021
FLAGSHIP 3 - MAKING INTERURBAN AND URBAN MOBILITY MORE SUSTAINABLE AND HEALTHY	
18. EU 2021 Rail Corridor Initiative - Action Plan to boost passenger rail transport	2021
19. Put in place measures to better manage and coordinate international rail traffic, including if necessary through revised rules for capacity allocation and infrastructure charging in rail[9]	2022
20. Revision of the Urban Mobility Package of 2013	2021
21. Zero pollution action plan for air, water and soil; revision of air quality standards and reduction of noise pollution	2021; 2022
22. Issue guidelines to support the safe use of micromobility devices	2021

[1] Unless otherwise indicated, the Action Plan lists Commission initiatives.
[2] This action has relevant aspects for flagship 2 in particular.
[3] This action has relevant aspects for flagship 1 in particular.
[4] This action has relevant aspects for flagship 1 in particular.
[5] This action has relevant aspects for flagship 10 in particular.
[6] This action has relevant aspects for flagship 5 in particular.
[7] This action has relevant aspects for flagship 5 in particular.
[8] This action has relevant aspects for flagship 1 in particular.
[9] This action has relevant aspects for flagship 4 in particular.

23. Assess the need for measures to ensure a level playing field for local, on-demand passenger transport and ride-hailing platforms	2022
FLAGSHIP 4 - GREENING FREIGHT TRANSPORT	
24. EU 2021 Rail Corridor Initiative - Revise the Rail Freight Corridor Regulation	2021
25. Review of the regulatory framework for intermodal transport, including the Combined Transport Directive	2022
26. Launch NAIADES III to exploit the untapped potential of inland waterways transport	2021
27. Enable B2A multimodal data exchange through implementation of the e-FTI Regulation and Maritime Single Window environment	2025
28. Issue guidelines for operators and platforms on informing users about the carbon footprint of their deliveries and on offering sustainable delivery choices[10]	2023
FLAGSHIP 5 - PRICING CARBON AND PROVIDING BETTER INCENTIVES FOR USERS	
29. Revision of the EU Emissions Trading System (ETS), with respect to maritime transport; aviation; and CORSIA[11]	2021
30. Revision of the Energy Taxation Directive[12]	2021
31. Review VAT exemptions for international passenger transport	2022
32. Put forward market-based measures for shipping at IMO	2022
33. Establish EU framework for harmonised measurement of transport and logistics emissions	2022
34. Issue guidelines for operators and platforms to inform passengers about the carbon footprint of their trip and to enable passengers to voluntarily offset it, and for wider use of eco-routing for (in-built) navigation software	2023
35. Development of an environmental label programme for aviation by EASA	2022
SMART MOBILITY	
FLAGSHIP 6 - MAKING CONNECTED AND AUTOMATED MULTIMODAL MOBILITY A REALITY	
36. Revise Delegated Regulation 2015/962 on real time traffic information services to extend geographical coverage and datasets; revise Delegated Regulation 2017/1926 on multimodal travel information services to include mandatory accessibility of new dynamic datasets	2021; 2022
37. Assess the need for regulatory action on rights and duties of multimodal digital service providers and issue a recommendation to ensure public service contracts do not hamper data sharing and support the development of multimodal ticketing services, together with an initiative on ticketing, including rail ticketing	2022
38. Revision of the Directive on Intelligent Transport Systems, including a multimodal ticketing initiative	2021
39. Complete the EU legal framework on the approval of automated vehicles	2021
40. Assess the need for an agency or other body to support safe, smart and sustainable road transport operations[13]	2022
41. Adopt the implementing legislation for the approval of connected and automated vehicles	2021
42. Adopt railway technical standards and specifications package on ERTMS/Control-Command and Signalling (CCS); and develop mandatory deployment plans for automatic train operation, automated traffic management and advanced CCS	2022
43. Revision of the Directive on Harmonised River Information Services	2022
44. Propose measures on electronic documents for inland crew and vessels	2021

[10] This action has relevant aspects for flagship 5 in particular.
[11] The action has relevant aspects for flagship 1-4 in particular.
[12] The action has relevant aspects for flagship 1-4 in particular.
[13] This action has relevant aspects for flagship 10 in particular.

FLAGSHIP 7 - INNOVATION, DATA AND AI FOR SMART MOBILITY	
45. Develop/renew R&I partnerships: Connected, cooperative and automated mobility; Shift2Rail; SESAR; Waterborne; Clean Aviation; Clean Hydrogen Partnership; Smart Networks and Services; AI, Data and Robotics; and Key Digital Technologies.	2020-2021
46. Further develop the regulatory framework for drones and unmanned aircraft, including U-Space; adopt a Drone Strategy 2.0	2021-2023; 2022
47. Assess the need for regulatory actions to ensure safety and security of new entrants and new technologies, such as hyperloop	2021
48. Set up a high-level group ('New Mobility Tech Group') as a first step toward the development of a coherent EU approach and a set of recommendations on facilitating testing and trials of emerging mobility technologies and solutions in the EU ('European Mobility Test Beds')	2022
49. Develop a common European mobility data space and establish a stronger coordination mechanism for the national access points established under the ITS Directive	2021
50. Set out an AI roadmap for mobility	2021
51. Review the regulatory framework for interoperable data sharing in rail transport (ERTMS, rail telematics applications)	2022
52. Review the current EU type approval legislation to facilitate car data-based services including interaction with energy system	2021
53. Propose a new regulatory framework to open up access to car data to mobility services	2021
54. Propose rules on a trusted environment for corridor data exchange to support collaborative logistics	2022
RESILIENT MOBILITY	
FLAGSHIP 8 - REINFORCING THE SINGLE MARKET	
55. Revision of the Regulation on the Trans-European Transport Network (TEN-T)[14]	2021
56. Assess the impacts of the COVID-19 pandemic on connectivity and competition in the market, and propose follow-up measures as appropriate	2021-22
57. Review the transport relevant State aid rules	2023
58. Prepare crisis contingency plan(s) for the transport sector, including health-safety and operational measures and setting out essential transport services	2021-2023
59. Revision of the Air Services Regulation	2021-22
60. Propose measures to encourage cross-border car rentals	2022
61. Guidance on climate proofing of transport infrastructure, networks and systems	2021
FLAGSHIP 9 - MAKING MOBILITY FAIR AND JUST FOR ALL	
62. Review of the interpretative guidelines on the Land PSO Regulation; revise rules on air PSOs; and provide guidance on freight PSOs	2021; 2022; 2023
63. Review of the passenger rights regulatory framework, including to ensure its resilience to extensive travel disruptions, and including options for multimodal tickets[15]	2021-2022
64. Assess the options and propose, if appropriate, an adequate financial protection scheme to protect passengers against the risk of a liquidity crisis or an insolvency regarding the reimbursement of tickets and if needed their repatriation.	2021-2022
65. Revision of the Code of Conduct for computerised reservation systems	2021-2022
66. Assess the need for a proposal to require efficient exchange of odometer readings across the EU	2021

[14] This action has relevant aspects for flagships 1-4 in particular.
[15] This action has relevant aspects for flagship 6 in particular.

67. Revision of the Directive on the certification of train drivers	2022
68. Launch initiatives to enhance living and working conditions for seafarers (including the revision of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers at the IMO)	2021
69. Issue recommendations for the transition to automation and digitalisation and their impact on the transport workforce	2023
70. Launch initiatives to increase the attractiveness of the transport sector	2021-2023
FLAGSHIP 10 - ENHANCING TRANSPORT SAFETY AND SECURITY	
71. Revision of the Directive on cross-border enforcement of traffic rules	2021-2022
72. Revision of the Driving Licence Directive to address technological innovation[16], including digital driving licences	2022
73. Consider new guidance on issues such as the maximum permitted blood alcohol content for drivers of motorised vehicles and on the use of alcohol interlocks	2022
74. Assess the need to propose rules for auditing, inspecting and reporting on infrastructure quality for bridges or other sensitive infrastructure	2023
75. Adapt the eCall legal framework to new telecommunication technologies; consider the extension of eCall to powered two wheelers, trucks, buses and agricultural tractors	2021; 2022
76. Revision of the maritime safety framework (Directives on flag state responsibilities, port state control and accident investigation)	2021
77. Revise the mandate of the European Maritime Safety Agency	2022
78. Propose EU manning requirements for inland navigation	2023-2024
79. Consider setting up an EU rapid alert mechanism for security, including cyber threats	2022
80. Explore the need to adapt existing rules to address cyber risks and insider threats, in line of the toolbox on 5G cybersecurity	2022
81. Improve security for passenger rail travel by implementing the results of the action plan on rail security and the Rail Passenger Security Platform	2022
82. Establish a scheme under the cybersecurity certification framework for automated vehicles	2023

[16] This action has relevant aspects for flagship 6 in particular.

EUROPEAN
COMMISSION

Brussels, 14.10.2020
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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives

{SWD(2020) 550 final}

1. BOOSTING BUILDING RENOVATION FOR CLIMATE NEUTRALITY AND RECOVERY

Europe's building stock is both unique and heterogeneous in its expression of the cultural diversity and history of our continent. But not surprisingly, it is also old and changes very slowly. More than 220 million building units, representing 85% of the EU's building stock, were built before 2001. 85-95% of the buildings that exist today will still be standing in 2050.

Most of those existing buildings are not energy-efficient[1]. Many rely on fossil fuels for heating and cooling, and use old technologies and wasteful appliances. Energy poverty remains a major challenge for millions of Europeans. Overall, buildings are responsible for about 40% of the EU's total energy consumption, and for 36% of its greenhouse gas emissions from energy[2].

The COVID-19 crisis has also brought into sharper focus our buildings, their importance for our lives and their fragilities. Throughout the pandemic, the home has been the focal point of daily life for millions of Europeans: an office for those teleworking, a nursery or classroom for children and pupils, for many a hub for online shopping or downloading entertainment. Schools had to adapt to distance learning. Hospital infrastructure has been under severe strain. Private business had to readjust to social distancing. Some of the effects of the pandemic may continue in the longer term creating new demands on our buildings and their energy and resource profile, further adding to the need to renovate them deeply and on a massive scale.

As Europe seeks to overcome the COVID-19 crisis, renovation offers a unique opportunity to rethink, redesign and modernise our buildings to make them fit for a greener and digital society and sustain economic recovery.

The Commission has proposed in the Climate Target Plan 2030[3] to cut net greenhouse gas emissions in the EU by at least 55% by 2030 compared to 1990. Energy efficiency is an essential component for action, with the building sector as one of the areas where efforts must be ramped up. To achieve the 55% emission reduction target, by 2030 the EU should reduce buildings' greenhouse gas emissions by 60%, their final energy consumption by 14% and energy consumption for heating and cooling by 18%[4]. It is therefore urgent for the EU to focus on how to make our buildings more energy-efficient, less carbon-intensive over their

[1] Building codes with specific regulation on thermal insulation of the building envelope started appearing after the 1970s in Europe. This means that a large share of today's EU building stock was built without any energy performance requirement: one third (35%) of the EU building stock is over 50 years old, more than 40% of the building stock was built before 1960. Almost 75% of it is energy inefficient according to current building standards. Source: JRC report "Achieving the cost-effective energy transformation of Europe's buildings".

[2] These figures refer to the use and operation of buildings, including indirect emissions in the power and heat sector, not their full life cycle. The embodied carbon in construction is estimated to account for about 10% of total yearly greenhouse gas emissions worldwide, see IRP, Resource Efficiency and Climate Change, 2020, and UN Environment Emissions Gap Report 2019.

[3] "Stepping up Europe's 2030 climate ambition Communication" COM (2020) 562 final

[4] Compared to 2015 levels, See *SWD(2020) 176 final*.

full life-cycle and more sustainable. Applying circularity principles to building renovation will reduce materials-related greenhouse gas emissions for buildings.

Today, only 11% of the EU existing building stock undergoes some level of renovation each year. However, very rarely, renovation works address energy performance of buildings. The weighted annual energy renovation rate is low at some 1%. Across the EU, deep renovations that reduce energy consumption by at least 60%[5] are carried out only in 0.2% of the building stock per year and in some regions, energy renovation rates are virtually absent. At this pace, cutting carbon emissions from the building sector to net-zero would require centuries. It is time to act.

Not only reducing energy bills and cutting down emissions are at stake. Renovation can open up numerous possibilities and generate far-reaching social, environmental and economic benefits. With the same intervention, buildings can be made healthier, greener, interconnected within a neighbourhood district, more accessible, resilient to extreme natural events, and equipped with recharging points for e-mobility and bike parking. Smart buildings can provide essential privacy-compliant data for city planning and services. Deep renovation can reduce pressure for greenfield construction, helping preserve nature, biodiversity and fertile agricultural land.

Investing in buildings can also inject a much-needed stimulus in the construction ecosystem and the broader economy. Renovation works are labour-intensive, create jobs and investments rooted in often local supply chains, can generate demand for highly energy and resource-efficient equipment and bring long-term value to properties. **By 2030 an additional 160 000 green jobs could be created in the EU construction sector through a renovation wave**[6]. This can be very valuable for a sector where more than 90% of the operators are SMEs, hard hit by the economic impact of the COVID-19 crisis. Activity in construction fell by 15.7% in relation to 2019 and energy efficiency investments have dropped by 12% in 2020. Even if a recovery is expected, there is likely to be a lasting impact on the sector.

Europe has now a unique chance to make renovation **a win-win for climate neutrality and recovery**. The EU's recovery instrument **NextGenerationEU,** alongside the **EU's Multiannual Financial Framework,** will make available an **unprecedented volume of resources** that can also be used to kick-start renovation for recovery, resilience and greater social inclusion**.** Tackling energy efficiency together with accessibility makes buildings more usable and sustainable in the context of an ageing population[7].

On this basis, this Communication presents a **strategy** to trigger a **Renovation Wave for Europe**, breaking down long-standing barriers to energy and resource-efficient renovation,

[5] See 2019 Commission Recommendation on Building Renovation (EU) 2019/786.
[6] Employment and Social Developments in Europe, Annual Review 2019, European Commission.
[7] The removal of barriers to accessibility is an obligation for the EU and all Member States as Parties to the UN Convention on the Rights of Persons with Disabilities.

supporting fresh investment over a sustained period starting from public and less efficient buildings, spurring digitalisation and creating employment and growth opportunities across the renovation supply chain**.**

The objective is **to at least double the annual energy renovation rate of residential and non-residential buildings by 2030 and to foster deep energy renovations. Mobilising forces at all levels towards these goals will result in 35 million building units renovated by 2030.** The increased rate and depth of renovation will have to be maintained also post-2030 in order to reach EU-wide climate neutrality by 2050.

2. KEY PRINCIPLES FOR BUILDING RENOVATION TOWARDS 2030 AND 2050

The EU must adopt an encompassing and integrated strategy involving a wide range of sectors and actors on the basis of the following key principles:

- *'Energy efficiency first'*[8] as a horizontal guiding principle of European climate and energy governance and beyond, as outlined in the European Green Deal[9] and the EU strategy on Energy System Integration[10], to make sure we only produce the energy we really need;

- *Affordability*, making energy-performing and sustainable buildings widely available, in particular for medium and lower-income households and vulnerable people and areas;

- *Decarbonisation and integration of renewables*[11]. Building renovation should speed up the integration of renewables in particular from local sources, and promote broader use of waste heat. It should integrate energy systems at local and regional levels helping to decarbonise transport as well as heating and cooling;

- *Life-cycle thinking and circularity*. Minimising the footprint of buildings requires resource efficiency and circularity combined with turning parts of the construction sector into a carbon sink, for example through the promotion of green infrastructure and the use of organic building materials that can store carbon, such as sustainably-sourced wood;

- *High health and environmental standards.* Ensuring high air quality, good water management, disaster prevention and protection against climate-related hazards[12], removal of and protection against harmful substances such as asbestos and radon, fire and seismic

[8] See Article 2(18) Governance Regulation (EU) 2018/1999: "'energy efficiency first' means taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions".

[9] The European Green Deal, COM(2019) 640 final.

[10] Powering a climate-neutral economy: An EU Strategy for Energy System Integration, COM(2020) 299 final.

[11] This refers to energy from renewable sources produced on-site or nearby.

[12] Climate resilient buildings means that the buildings are renovated to be resilient against acute and chronic climate related hazards relating to temperature, wind, water and solid mass, as appropriate. A complete list of such hazards is included in Table 1 of Annex I of Commission Implementing Regulation (EU) 2020/1208.

safety. Furthermore, accessibility should be ensured to achieve equal access for Europe's population, including persons with disabilities and senior citizens.

- *Tackling the twin challenges of the green and digital transitions together.* Smart buildings can enable efficient production and use of renewables at house, district or city level. Combined with smart energy distribution systems, they will enable highly efficient and zero-emission buildings.

- *Respect for aesthetics and architectural quality*[13]. Renovation must respect design, craftsmanship, heritage and public space conservation principles.

3. DELIVERING FASTER AND DEEPER RENOVATION FOR BETTER BUILDINGS

The EU has established a regulatory framework and a set of funding instruments to promote energy efficiency, building renovation and renewables deployment at building, neighbourhood and district level. The Clean Energy for All Europeans Package of 2018 and 2019 has upgraded it, creating a solid basis for energy market integration, renewables deployment and energy efficiency promotion, and its provisions need to be fully implemented as a matter of utmost priority by all Member States and stakeholders.

This framework has driven substantial progress in the energy performance of buildings: new buildings today consume half of the energy compared to similar new buildings 20 years ago. Thanks to energy efficiency obligation schemes, an increasing number of energy companies ensure that their customers save energy, offering commercial packages that increasingly address building renovation and system upgrades. Europe represents around 40% of world-wide investments in improving building energy efficiency (between EUR 85-90 billion annually), with a building sector at the forefront of applying life-cycle principles[14]. Yet, the level of renovations of existing buildings remains persistently low and shallow.

Renovation is held back by barriers at different points throughout the value chain – from the initial decision to engage in renovation, to financing and completion of the project. For instance, when considering a renovation, benefits from energy savings might be uncertain or poorly explained and understood, especially by the end-users. They can be difficult to measure and monetise[15]. Renovating can also be costly, difficult to organise and lengthy to carry out. Mobilising financing can be difficult, in particular at local and regional level. Public funds are frequently scarce and difficult to blend due to regulatory obstacles and lacking capacity in public administrations.

[13] In line with the Davos Declaration "Towards a High-quality Baukultur in Europe" adopted by European Ministers of Culture and stakeholders in 2018, "quality architecture" is not only defined by aesthetics and functionality but also by its contribution to people's quality of life and to the sustainable development of our cities and rural areas.

[14] Circular economy actions can lead to reductions of up to 60 % in the materials-related greenhouse gases emitted across the life-cycles of buildings. https://www.eea.europa.eu/highlights/greater-circularity-in-the-buildings

[15] See JRC report "Untapping multiple benefits: hidden values in environmental and building policies"

To kick-start a large-scale, sustainable deployment of renovation all over Europe, it is necessary to break the key barriers at every point of the supply chain.

Based on its analysis and a public consultation[16], the Commission has identified the following areas of intervention and lead actions critical to enable a step-change in the depth and scale of renovations:

1) **Strengthening information, legal certainty and incentives** for public and private owners and tenants[17] to undertake renovations. The Commission will revise in 2021 the Energy Efficiency and the Energy Performance of Buildings Directives[18]. It will propose to introduce a stronger obligation to have **Energy Performance Certificates** alongside a phased introduction of mandatory **minimum energy performance standards** for existing buildings. It will also propose to **extend the requirements for building renovation to all public administration levels.** The impact assessments accompanying these legislative revisions will consider different options in terms of the level, scope and timing of these requirements.

2) **Ensuring adequate and well-targeted funding**. The 2021 Annual Sustainable Growth Strategy[19] and the Guidance on Resilience and Recovery Plans[20] identified building renovation as a priority for national recovery plans under the European **Flagship 'Renovate'**. Beyond recovery, this Communication proposes to increase the volume and impact of **EU funding** by providing more grants, technical assistance, project development support and loans and making it possible to combine them where this was not possible in the past. The Commission will promote a genuine market for energy services and will strengthen the access to attractive **private financing**[21] through the Renewed Sustainable Finance Strategy. Support for access to essential energy services should be available for those in need[22].

3) **Increasing the capacity** to prepare and implement projects. The Commission will scale up **technical assistance** and make it closer to regional and local actors, in

[16] The summary report of the stakeholder consultation process is available on the Have Your Say portal (here) and on the Renovation Wave dedicated webpage (here).
[17] In residential buildings, insufficient understanding of energy use and savings is rated as very important/important barrier by more respondents to the Open Public Consultation on the Renovation Wave than any other barrier. Different interests between house owners and house occupants, disagreements between several owners and difficulties in planning building renovation works are among the top barriers to building renovation.
[18] Directive 2012/27/EU on energy efficiency (EED), as amended by Directive 2018/2002; Directive (EU) 2010/31 on Energy Performance of Buildings (EPBD) as amended by Directive.
[19] COM(2020) 575 final
[20] Published on 17 September 2020
[21] Lack of or limited resource to finance building renovation comes as the most important barrier to building renovation rated as very important/important by an overwhelming majority of 92% of respondents to the Open Public Consulation on the Renovation Wave
[22] Cf. European Pillar of Social Rights, principle 20
https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

particular by strengthening the European Local Energy Assistance (ELENA) and using the technical assistance window under the Resilience and Recovery Fund.

4) **Promoting comprehensive and integrated renovation interventions** for smart buildings, integration of renewable energy and enabling to measure actual energy consumption. The **new Smart Readiness Indicator**[23] promotes digitally friendly renovations. In the framework of the ongoing Construction Products Regulation revision the Commission will consider how sustainability criteria could support the uptake of more sustainable construction products in construction works and foster the uptake of the latest technologies.

5) **Making the construction ecosystem fit to deliver sustainable renovation**, based on circular solutions, use and reuse of sustainable materials, and the **integration of nature-based solutions**. The Commission proposes to promote the development of standardised sustainable industrial solutions and the reuse of waste material. It will develop a 2050 roadmap for **reducing whole life-cycle carbon emissions** in buildings, including through the use of biobased products, and review material recovery targets. To boost **know-how and workers' skills in the renovation** sector the Commission will work with Member States through the **Skills Agenda** and its upcoming **Pact for Skills** and through Cohesion policy funds and the Just Transition Fund to finance training and re-training initiatives, in close cooperation with social partners.

6) Using renovation as a **lever to address energy poverty** and access to **healthy housing** for all households, including for persons with disabilities and for older people. The Commission presents a Recommendation on **Energy poverty**. The Commission will launch an **Affordable Housing Initiative for 100 lighthouse project** and will examine whether and how the EU budget resources alongside EU Emissions Trading System (EU ETS) revenues could be used to fund national energy efficiency and savings schemes targeting lower-income population.

7) Promoting the **decarbonisation of heating and cooling,** which is responsible for 80% of energy consumed in residential buildings, through the 2021 revisions of the Renewable Energy and Energy Efficiency Directives and the EU ETS, the application and further development of eco-design and labelling measures, as well as support to district approaches.

These lead actions and several flanking policy, regulatory and funding measures are described in more detail in the following sections.

[23] Commission Delegated Regulation C(2020) 6930, supplementing Directive (EU) 2010/31/EU of the European Parliament and of the Council by establishing an optional common European Union scheme for rating the smart readiness of buildings), and Commission Implementing Regulation C(2020) 6929, detailing the technical modalities for the effective implementation of an optional common Union scheme for rating the smart readiness of buildings.

3.1. STRENGTHENING INFORMATION, LEGAL CERTAINTY AND INCENTIVES FOR RENOVATION

The starting point of a sustainable renovation is always an individual decision, balancing expected benefits and costs. Yet, today, insufficient information on the current energy and resource profile of buildings and the potential benefits of renovation, lack of trust in the actual energy savings and split incentives between owners and tenants are among the strongest barriers to taking such a decision.

Some Member States have decided to tackle this by introducing minimum performance levels by a specified compliance deadline or at certain moments in the lifetime of a building[24]. Such requirements provide an anchor for investors and business expectations and work best in combination with reliable energy performance certificates and funding. The advantages of such a regulatory push include drawing clear lines for decision-making in multi-owner buildings, reflecting energy performance in the value of a building, and remedying general low awareness of the benefits of renovation.

Building on such good practices, the Commission will propose **mandatory minimum energy performance standards** as part of the revision of the Energy Performance of Buildings Directive (EPBD) by the end of 2021, following an impact assessment looking at the scope, timeline and phasing of a progressive implementation of such requirements, including the need for accompanying support policies. Such measures will facilitate linking specific national, regional and local incentives and support compliance with these minimum standards.

The Commission considers that **energy performance certificates (EPC)** and their availability in accessible databases improve transparency of the performance of the building stock. At the building level, EPCs inform about energy performance, share of renewables and energy costs. At district, regional, national or Union level, they are crucial for identifying the worst-performing buildings in urgent need of renovation. They can be used to evaluate improvements relative to the investment before and after the works and help connect financing with quality renovation.

The EPBD already establishes requirements for EPCs in case of construction, change of occupancy and for buildings occupied by public authorities and frequently visited by the public of over 250 m^2. However, the coverage of EPC is still limited, with several Member States having less than 10% of the building stock with EPCs. Their quality and fair pricing remain an issue, eroding the trust in this tool. Very few of the EPCs are based on physical energy audits, and they do not reflect the interconnectivity and smart readiness of buildings. Given that solutions are increasingly available to measure and manage energy performance during the use of the buildings, the Commission will propose to **update the EPC framework**,

[24] In the context of their Long-Term Renovation Strategies, France has adopted a progressive set of measures to this effect, starting with a ban on rent increase in the case of poorly performing buildings ("passoire énergétique", no performance specified) as from 2021, a ban on renting these as from 2023 and an obligation to renovate all worst performing buildings as from 2028. In the Netherlands, all office buildings will have to be EPC class C by 2023 and EPC class A by 2030. Belgium-Flanders is also considering policy proposals for minimum EPC level for non-residential buildings from 2030 and minimum EPC level for residential rentals.

taking into account emerging energy performance metering technologies. This will include looking at **a uniform EU machine-readable data[25] format** for the certificates and more stringent provisions **on availability and accessibility of databases and federated digital repositories for EPCs.**

The Commission will also examine the need for extending **energy audits requirements**[26] to larger and more complex non-residential buildings such as hospitals, schools or offices, in order to also maximise complementarity with EPCs.

The existing legislative requirements for purchasing and renovation of existing public buildings currently cover only public buildings owned and occupied by the central governments, which represent around 4.5% of all public buildings. As part of the revision of the EED, the Commission will examine the need to **extend the renovation requirements to buildings at all public administration levels**, including the Commission, and to increase the annual renovation rate.

Deep renovation is not always achievable in one go. It is therefore important to create better conditions for staged renovation. The Commission will introduce **Digital Building Logbooks**[27] that will **integrate all building related data** provided by the upcoming **Building Renovation Passports**[28], **Smart Readiness Indicators**, **Level(s)**[29] and **EPCs** to ensure compatibility and integration of data throughout the renovation journey.

The Commission will explore with Member States, stakeholders, market players and data providers whether it is possible for the **European Building Stock Observatory**[30] to become a central European repository for reliable data on the building stock and its energy performance and support the design of incentives in this domain.

[25] Lack of a common data format results in certificates as pdf file and thus prevents the easy access, use and analysis of relevant data.
[26] By June 2021, as part of the revision of the EED. Energy audits are currently mandatory for large enterprises and Member States must set up programmes to encourage SMEs to carry them out, but it is not compulsory to implement audit recommendations.
[27] Digital Building Logbooks will serve as repositories for data on individual buildings and facilitate information sharing within the construction sector, and between building owners and tenants, financial institutions and public authorities.
[28] As foreseen by the EPBD, Building Renovation Passports will provide a clear roadmap for staged renovation over the lifetime of a building, helping owners and investors plan the best timing and scope for interventions.
[29] The Commission's recent Level(s) framework covers energy, material and water use, quality and value of buildings, health, comfort, resilience to climate change and life-cycle cost. https://ec.europa.eu/environment/eussd/buildings.htm
[30] See https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/eu-bso_en

3.2. REINFORCED, ACCESSIBLE AND MORE TARGETED FUNDING

Building renovation is one of the sectors facing the largest investment gap in the EU. The Commission estimates that in order to achieve the proposed 55% climate target by 2030, around EUR 275 billion of additional investments are needed per year[31].

In the residential building sector, the lack of simple, attractive and easily accessible public incentives for renovation and the lack of mainstream financing products are often mentioned as a barrier. Even when funding is in principle available, the shortage of information and low awareness of available funding, cumbersome procedures or regulatory constraints for accessing public finance limit its use. In the non-residential sector, the lack of funding for publicly-owned buildings and the lack of suitable financial incentives for commercial buildings are two of the most relevant obstacles.

To overcome these barriers, it is necessary to act on different fronts to foster a better use of EU and national public funds and mobilise a greater share of private funds. EU and national public funds can be more effectively targeted and better channelled to the end-users by making it easier to blend various sources of financing, making the intensity of support proportional to performance, strengthening technical or project development assistance and promoting synergies with market-based mechanisms.

EU funding driving investment for renovation

The 2021-2027 Multiannual Financial Framework and the recovery instrument NextGenerationEU provide an unprecedented opportunity to set off the Renovation Wave. Never before have such investment possibilities existed for this crucial sector.

The Recovery and Resilience Facility, which is currently under negotiation and which the European Council agreed to endow **with EUR 672.5 billion**, 37% of which would be targeted to climate-related expenditure, can support renovation investment and energy efficiency-related reforms across Member States. In the Annual Sustainable Growth Strategy 2021, the Commission has proposed the **European Flagships Renovate and Power Up** for coordinated intervention by all Member States**,** based on projects included in their national Recovery and Resilience Plans[32].

To sustain the implementation of these Flagships, the Commission will complement the Guidance to Member States on the preparation of Recovery and Resiliency Plans[33] with tailor-made guidance to each Member State in the context of the individual assessment of National Energy and Climate Plans (NECPs)[34] and Long-term Renovation Strategies. An example of

[31] See "Identifying Europe's recovery needs", SWD(2020) 98 final and "Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people", SWD(2020) 176 final.
[32] Support from other EU programmes such as InvestEU, the Connecting Europe Facility, LIFE and Horizon Europe as well as national funds can also be combined with the Recovery and Resilience Facility.
[33] COM(2020) 575 final Annual Sustainable Growth Strategy 2021
[34] For individual assessments, please see SWD(2020)900-SWD(2020)926

possible components of a Recovery and Resilience Plan on building renovation, energy and resource efficiency will be made available by the Commission to give practical guidance to Member States[35]. Finally, the Commission will strengthen the **existing Concerted Actions**[36] to help Member States exchange good practices and monitor implementation over time.

Cohesion policy has historically represented a main source of EU public funding for direct investment in improving buildings' energy efficiency and will maintain this role over the 2021-2027 period[37]. It complements the temporary Recovery and Resilience Facility and provides integrated support to building renovation, including for tailor-made renovation programmes at local and regional levels. Using experience from previous programming periods, Member States need to ensure that their co-funded energy and resource efficiency programmes are well targeted on delivering high energy performance, the monitoring of which will be improved through a more detailed and robust indicator system.

Member States should also complement the deployment of EU co-funded programmes with additional support schemes, in particular to mobilise private financing[38]. In rural areas, funding from the European Agricultural Fund for Rural Development (EAFRD) can be used to enhance energy efficiency and the production of renewable energy.

Programming documents should set out **renovation priorities** drawn from the **NECPs and Long-Term Renovation Strategies**. Member States that have not yet presented the Long-Term Renovation Strategies are invited to do so as they are part of the required enabling conditions to access Cohesion Funds from 2021 onwards.

Building on the positive experience of the European Fund for Strategic Investments (EFSI) and complementing other EU funding sources, **InvestEU** will act as a single EU-level investment support programme to provide technical assistance and financing backed by an EU budget guarantee to unlock private investments. Within the Social Investment and Skills Window and the Sustainable Infrastructure Window of InvestEU, dedicated financial products for energy renovation of buildings will target the residential sector and focus on social and affordable housing, public buildings, schools and hospitals, SMEs and support for ESCOs to mainstream energy performance contracting.

Drawing on the experience gained with the Private Finance for Energy Efficiency and the Smart Finance for Smart Buildings initiatives, the Commission will work to facilitate **needs-driven solutions which are easily accessible for project promoters and use a single set of rules**. Concretely, this means that a Member State will be able to transfer part of the funding available under cohesion policy to the Member State compartment of InvestEU. The InvestEU

[35] https://ec.europa.eu/info/departments/recovery-and-resilience-task-force
[36] Setting up a dedicated thematic focus on the Renovate Flagship, and involving representatives across the various national ministries concerned as part of the Energy Performance of Buildigs Directive Concerted Action (https://epbd-ca.eu) in close cooperation with the Concerted Actions on the Energy Efficiency Directive and the Renewable Energy Directive, and in liaison with the Technical Working Group under the Energy Union Governance.
[37] In 2014-2020, around EUR 17 billion in cohesion funds were dedicated to building renovation.
[38] With ERDF funds, Croatia has funded the renovation of 250 000 m^2 and 69 public buildings, such as hospitals and nursery schools with expected annual savings of 70GWh.

programme will also enable linking financial products backed by the InvestEU guarantee with dedicated technical assistance to banks and intermediaries, to local authorities and final beneficiaries. The simplified rules also allow to combine loans with grants **and reward best-performing projects with a higher grant rate**.

In the context of its newly established European Initiative for Building Renovation, the European Investment Bank (EIB) will step up its support for the aggregation into portfolios of building renovation projects and the provision of tailored financial support, ranging from traditional long-term loans to guarantees, equity or receivables financing. To scale up the volume and impact of lending for energy efficiency of buildings, the EIB should be able to more easily combine technical assistance, project development assistance, loans and grants as a single package.

The Commission will work in cooperation with the Member States, the EIB and market participants to facilitate the implementation of **rules for combining** EU programmes and instruments, national funds and private funds for renovation projects.

As part of the ongoing revision of the General Block Exemption Regulation and the Energy and Environmental Aid Guidelines, the Commission will set up **simpler, clearer and easier-to-apply State Aid rules for building renovation**, in particular in the residential and social sectors, and clarify the scope of State Aid for **renewable energy installations for self-consumption**. As a first step, the Commission is revising State aid rules to facilitate co-financing of InvestEU guarantees by Member States[39].

Finally, building on the experience gained in some national contexts, the Commission stands ready to **advise Member States that are considering using revenues from the EU Emissions Trading System (ETS) and funding opportunities under the ETS Modernisation Fund** as a source of funding for building renovation programmes, in particular for lower-income households.

ATTRACTING PRIVATE INVESTMENT AND STIMULATING GREEN LOAN FINANCING

Given the low risk profile of energy efficiency investments[40] and the demand prospects that a renovation wave will underpin, offering private financing jointly with innovative services for renovation will be an increasingly attractive business proposition. Actors like ESCOs, utilities or banks already use and provide technical advice. They can offer property owners much-needed support in terms of ideas and financing in all phases of a renovation process. They can promote the aggregation of small projects, offer favourable conditions for complex projects with long payback times and unite the various actors involved in taking buildings renovation decisions.

[39] Targeted review of the General Block Exemption Regulation (State aid): extended scope for national funds to be combined with certain Union programmes (2nd consultation)
https://ec.europa.eu/competition/consultations/2020_gber/consultation_document_en.pdf

[40] Higher energy efficiency is seen to be correlating with lower mortgage default rates and with increasing asset value. Source: Final report on correlation analysis between energy efficiency and risk. EeDaPP.
https://eedapp.energyefficientmortgages.eu/wp-content/uploads/2020/08/EeDaPP_D57_27Aug20-1.pdf

Secondly, Member States can reduce risk perception and scale up market incentives such as energy-saving tariffs, pay-per-performance public support schemes and energy-saving tenders to attract private intermediaries and aggregators. Member States should also explore innovative financing solutions through on-tax and on-bill schemes or property-linked finance, a well as taxation tools[41] to generate economic incentives to finance building renovation. Existing **energy efficiency obligation schemes** under Article 7 of the Energy Efficiency Directive can be effectively used for all types of buildings[42] to engage new intermediaries like utilities, deliver technical expertise and offer aggregated services to reduce transaction and administrative costs.

Involving ESCOs through **public-private partnerships** is a possibility to attract investment, pool together small-scale and scattered investments, reduce upfront costs and reward the energy savings. Coupling energy performance contracts with **resilience contracting** by insurers can help the market manage investment risk because insurers have expertise on assessing and offering protection against environmental, climate and other risks.

To help reduce transaction costs, the Commission will encourage the **standardisation of contracts and financial instruments** at national and European level, by using existing forums to help replicate and scale up best practices and innovative approaches. The Commission will actively support these ways of activating private-sector investments through the Energy Efficiency Financial Institutions Group (EEFIG) and the Sustainable Energy Investment (SEI) Forums.

A renovation wave can also be an opportunity to spur the development of **green loan and mortgage financing**. An upgraded system of EPCs demonstrating efficiency gains will allow banks and other financial institutions to offer credit and mortgage financing to green their portfolios and to pool buildings as a collateral for the issuance of covered bonds. A number of market-led initiatives are already piloting innovative schemes for energy efficiency loan and mortgage financing[43]. In a next step, whole life-cycle carbon can be included in this assessment and linked to financing for circular solutions.

With the EU Renewed Sustainable Finance Strategy, the Commission is looking into additional standards and labels for sustainable financial products, such as green mortgages, green loans and green bonds. This will help make sure energy and resource efficiency lending products are offered more widely and are more visible to consumers. The reviews of the

[41] Such as tax incentives and credits in the context of direct taxation (e.g. income and corporate taxation) and environmental taxation (carbon taxes), property taxation favouring better buildings, earmarking tax revenues for renovation, tax depreciation favouring renovation investments, VAT rates for construction services and sustainable materials in line with the VAT Directive (Annex III), as well as regional and local taxes and fees. See also Bertoldi, P, Economidou, M, Palermo, V, Boza-Kiss, B, Todeschi, V. How to finance energy renovation of residential buildings: Review of current and emerging financing instruments in the EU. WIREs Energy Environ. 2020;e384. https://doi.org/10.1002/wene.384

[42] The energy savings achieved under these obligations contribute to delivering on the energy savings obligation under Article 7 EED.

[43] Using grants from Horizon 2020, the European Mortgage Federation - European Covered Bond Council (EMF-ECBC) has been developing an Energy Efficiency Mortgages Initiative with a set of supportive actions to stimulate private financing in energy saving renovation of residential and commercial buildings.

Mortgage Credit Directive[44] **and the Consumer Credit Directive**[45] provide opportunities to adequately reflect a possible lower credit risk of sustainable financial products[46]. Moreover, the European Banking Authority is analysing whether a dedicated prudential treatment in bank regulation of financial products associated with sustainability objectives, such as building renovation, would be justified. The Commission is also considering measures to **incorporate environmental, social and governance risks** into prudential regulation in its reviews of the rules for banks (the Capital Requirements Regulation and Directive) and insurers (the Solvency II Directive). The EIB will also consider supporting new ways to attract private finance for building rehabilitation, including unlocking new markets in energy efficiency mortgage-based lending or securitisation.

Finally, the Commission is developing the **EU Taxonomy**[47], with technical screening criteria for the buildings sector, to direct private capital towards sustainable investments in energy renovation, relying on Energy Performance Certificates and nearly zero-energy building standards. As part of the EPBD revision, the Commission will also consider introducing a **'deep renovation' standard**, to enable anchoring significant private financing to transparent, measurable and genuinely "green" investments.

All these initiatives can help customers to access funding on cheaper terms and help promoting the development of dynamic private financing complementing public funds, tax incentives and other forms of public financial support.

3.3 INCREASING CAPACITY AND TECHNICAL ASSISTANCE

Preparig a good renovation project, matched with the best financing sources available, is difficult and often very complicated for individuals or small local authorities**.** Thus, **technical assistance** is going to play a key role for the expected increased rates and quality of renovation. Some of this assistance is in the Member States' hands, but the EU can play a stronger role.

Based on lessons learnt from the ELENA facility, Private Financing for Energy Efficiency (PF4EE), cohesion policy, JASPERS programme and the Horizon 2020 Project Development Assistance (PDA) facility, the Commission will simplify and reinforce technical assistance, with a priority objective to reach a larger pool of beneficiaris, including those of a smaller size. Strengthened financing for the ELENA facility has been proposed to come from the InvestEU advisory hub and possibly from other European programmes

The Commission, together with the EIB, will help Member States to design national or local programmes **replicating the ELENA model**[48] and to reward fast implementation and high

[44] Directive 2014/17/EU
[45] Directive 2008/48/EC
[46] See EaDaPP, Final results of the correlation analysis between energy efficiency and risk, 2020.
[47] Through two delegated acts:on Climate Change mitigation and adaptation and on Transition to a circular economy, as well as Sustainable use and protection of water and marine resources, Pollution and prevention control and Protection and restoration of biodiversity and ecosystems. Regulation (EU) 2020/852, OJ L 198, 22.6.2020, p. 13.
[48] By using the cohesion policy funds, the Member State compartment of InvestEU or the Recovery and Resilience Facility.

energy performance using three financing streams: cohesion policy funds (as a stand-alone support or as a part of a financial instrument operation), the Member State compartment of InvestEU, or the Recovery and Resilience Facility.

In addition, the Commission and the EIB will support setting up standardised **one-stop shops** that can be deployed quickly at national, regional or local levels for delivering tailored advice and financing solutions designed to accompany homeowners or SMEs throughout the preparation and implementation of their projects. Local actors can build on this platform to create competence centres for various types of advice on sustainable renovation.

Additional source of capacity support will be offered by the proposed new **Technical Support Instrument** of the Recovery Plan, the **EU City Facility** and the **Project Development Assistance Facility** under LIFE, and the administrative capacity building and technical assistance under the post-2020 cohesion policy funds. Furthermore, the cohesion policy legislative proposal also includes the creation of an European Urban Initiative to strengthen integrated and participatory approach to sustainable urban development. For national, regional or local authorities interested in deploying building renovation investments as part of urban renewal, the European **Smart Cities Marketplace** offers a successful blueprint[49] to guide public authorities in doing so.

3.4. CREATING GREEN JOBS, UPSKILLING WORKERS AND ATTRACTING NEW TALENTS

The design, installation and operation of circular and low-carbon solutions often require a high level of technical knowledge. Specific skills are also needed for the safe management of historical buildings and safeguarding their heritage value. The transformation towards a climate-neutral building stock will only be possible if existing jobs are transformed to include green and circular skills and if new job profiles emerge, such as specialists in deep building renovation, installers for advanced technological solutions, or Building Information Modelling managers. Only well-informed professionals can play their potentially key role in offering end-users latest available technical opportunities for resource and energy efficiency. Finally, professionals require training to improve accessibility in renovations.

Already before the COVID-19 crisis, there was a shortage of qualified workers to carry out sustainable building renovation and modernisation. The potential for job retention and creation in this sector has been and remains large. Energy efficiency in buildings is the largest generator of jobs per million euros invested[50]. If Member States were to quickly implement measures to improve insulation, technical building systems and appliances, new employment opportunities would immediately present themselves. Policy should signal to the market that innovative and sustainable solutions are needed. For example, the bioeconomy can provide new low-carbon materials for deep renovations, increasing new specialist job opportunities.

[49] The Smart Cities Marketplace builds on the experiences and outcomes of 17 large-scale cross-border cooperative city demonstration projects, known as "Lighthouse projects". These lighthouse projects gather 120 cities, based on more than EUR 400 million funding through Horizon2020 that has leveraged much higher amounts of investments. More information is available at https://smartcities-infosystem.eu/scc-lighthouse-projects.

[50] 12-18 local jobs per million euro invested, IEA, Sustainable Recovery, June 2020.

Increasing the presence and role of **women** in the construction sector can help improve the availability of skills and qualified professionals. Revising vocational and educational training strategies by involving industry, creating an inclusive and accessible working environment and overcoming prejudices is key. SMEs should be given better access to information about training and apprenticeship programmes. Social partners, including workers' and employers' representatives of the construction sector at national and European level, have solid expertise in upskilling workers, attracting new talent and promoting an inclusive working environment and should be involved in the design and implementation of measures to achieve these goals.

The **occupational safety and health perspective** of workers in construction – a sector with a comparatively high risk of accidents and ill-health – is important and legal requirements for worker protection should be complied with, with a particular attention to protecting workers renovating old buildings from exposure to asbestos, also through appropriate training[51].

To address these issues, and building on the 2020 Skills Agenda and the Blueprint for sectoral cooperation on skills[52], the Commission will launch the **Pact for Skills** bringing together private and public stakeholders with the shared objective of up- and reskilling Europe's workforce. The Commission encourages Member States to make use of the Next Generation EU funds, the **European Social Fund+** and the **Just Transition Fund**. Apprenticeships and other forms of work-based learning facilitate the transition of young people into the labour market. The Commission's Youth Employment Support package of 1 July 2020 announced a renewed **European Alliance for Apprenticeships**. With the support of the **Build Up Skills** initiative that continues under the LIFE programme, Member States can update their gap analysis and National Roadmaps for training as the Commission will develop **training material on the use of Level(s)[53]** in 2021.

3.5. CREATING A SUSTAINABLE BUILT ENVIRONMENT

Delivering the depth and volume of renovation Europe needs, ultimately requires a strong and competitive construction sector, embracing innovation and sustainability to increase quality and reduce costs.

European companies lead in innovation, manufacture, distribution and installation of a variety of energy-saving and renewables-related goods and services in buildings. Consolidating this lead role requires uptake of industrialised technological solutions in order to limit the cost and duration of works, faster digitalisation and the full integration of circularity principles across the value chain: sourcing safe, sustainable and secondary raw materials, reuse and recycling and waste management. **Industrialisation** can trigger a **virtuous circle** between higher demand for deeper renovation and falling costs for smarter and more sustainable products.

[51] In line with national measures transposing Directive 2009/148/EC on the protection of workers from the risks related to exposure to asbestos at work

[52] The Blueprint for sectoral cooperation on skills will develop a sectoral strategy for skills intelligence and labour market relevant skills development, including the development of relevant European vocational core curricula and roll out training.

[53] Level(s) is a common European approach to assess and report on the sustainability of buildings. See https://ec.europa.eu/environment/eussd/buildings.htm

The Commission promotes environmental sustainability of building solutions and materials, including wood and bio-based materials, nature-based solutions and recycled materials on the basis of a comprehensive life-cycle assessment approach. It will address the sustainability performance of construction products in the context of its revision of the Construction Product Regulation and it will develop by 2023 a roadmap leading up to 2050 for **reducing whole life-cycle carbon emissions** in buildings. The Commission will also accelerate work with standardisation organisations on **climate resilience** standards for buildings.

By the end of 2024, the Commission will review the **material recovery targets** set in EU legislation for construction and demolition waste. The Commission will put in place measures to **increase reuse and recycling platforms** and support a well-functioning **internal market for secondary raw materials**. **Level(s),** the **Circular Economy principles** for buildings design and the **EU Construction and Demolition Waste management protocol** guide the user to apply these principles in renovation projects.

The uptake of and investments into digital and innovative technologies by the construction sector remain low[54]. The Commission will therefore support digitalisation in the construction sector through **Horizon Europe, Digital Innovation Hubs and Testing and Experimentation Facilities. Digital tools**[55] help record the progression of works, the use of materials and increase productivity. For example, a digital twin of a building, enabled by 3D mapping data, provides information on how the building is performing in real-time and prevents serious accidents by helping predict potential failures in building systems. Cost savings are present across the value chain from accelerated administrative procedures and physical works. Smart buildings and digitally enabled construction generate large pools of data for the whole life-cycle of construction, use and renovation of buildings to be able to operate them better. The Commission will consider setting a governance framework for data spaces with further actions to develop allocated data spaces, including in the areas of energy, manufacturing and construction.

Building Information Modelling (BIM) improves transparency and reduces costs and resource use. The Commission will provide a **recommendation to promote Building Information Modelling in public procurement** for construction and provide a methodology to public clients to conduct cost-benefit analysis for the use of BIM in public tenders. Digital industrial platforms will allow stakeholders to collect and make better use of this data. The Commission will also develop a **unified EU Framework for digital permitting** in the built environment and establish a trusted scheme for **certifying energy efficiency meters** in buildings that can **measure actual energy performance improvements**.

Research must also spur innovation in the construction sector. The **European Green Deal Call**, part of **Horizon 2020**, includes an area dedicated to 'Energy and resource-efficient

[54] Currently, 70% of construction firms dedicate less than 1% of their revenues to digital and innovative projects, and the uptake of Building Information Modelling (BIM) remains particularly low. Technologies, such as IoT, AI, robots, digital twins reduce the time needed for physical works.
[55] Including, Building Information Modelling (BIM), Geographic Information System (GIS) and Augmented Reality

buildings'. **Horizon Europe** will support research and innovation on energy technologies, sustainability and circularity of materials and systems for construction, taking into consideration the specific conditions of every geographic region of Europe. In the preparation of Horizon Europe Programme implementation, the Commission is currently considering a Public-Private Partnership on People-centric Sustainable Built Environment (Built4People) and a dedicated Mission on Climate-Neutral and Smart Cities. The partnership could deliver innovation to the buildings and construction industry and the mission could showcase 100 European cities in their systemic transformation towards climate neutrality by 2030 together and for the citizens.[56].

In addition, if adopted, the **Clean Energy Transition Co-funded Partnership**[57] can contribute to developing climate-neutral solutions for heating and cooling systems in buildings. Other programmes of relevance for building renovation research and innovation domains include regional programmes (also in the light of the **Seal of Excellence**), and the new LIFE prgramme. In particular, the **Clean Energy Transition sub-programme under LIFE** will support the renovation wave by addressing behavioural and non-technological barriers to renovation[58].

3.6. PLACING AN INTEGRATED, PARTICIPATORY AND NEIGHBOURHOOD BASED APPROACH AT THE HEART OF THE RENOVATION WAVE

Fully reaping the potential of a renovation wave in terms of co-benefits requires an integrated approach that has already been successfully piloted. "Smart" homes can promote user comfort, increase the integration of renewable and surplus energy into buildings. In some pilot projects, apartment buildings were equipped with photovoltaic solar panels on the roofs, thermal storage and heat pumps. Each building was connected to a local grid, which fed charging points for electric cars. The application of smart meters[59] helped match power supply and demand in the most efficient way. As a result, the buildings were transformed from consumers to producers of energy, with high energy efficiency, reduced energy costs for households, integration of e-mobility and systemic benefits for the stability of the grids.

This is just an example of what can be achieved through an integrated digital renovation that combines energy storage and demand-side flexibility, on-site energy generation from renewable sources, Internet of Things of the system components, appliances and recharging points for e-mobility. This promotes an active participation of citizens in the energy system as prosumers.

[56] The Horizon Europe Misson on 'Climate-Neutral and Smart Cities' aims to support, promote and showcase 100 European cities in their systemic transformation towards climate neutrality by 2030 and make these cities into experimentation and innovation hubs for all cities, thus leading on the European Green Deal and on Europe's efforts to become climate neutral by 2050.

[57] The Clean Energy Transition Co-funded Partnership covers all the areas of the Strategic Energy Technology Plan is linked to the National Energy and Climate Plans.

[58] Such as green mortgages definitions, property-linked finance, or new one-stop-shop models.

[59] Smart meters have a strong potential to raise consumers' awareness on energy consumption patterns. Smart gas meters are a requirement under the Energy Efficiency Directive complementing obligations on smart electricity meters.

The EPBD[60] already provides for measures to promote smart infrastructure and the roll-out of charging points for e-mobility. In line with the objective to deploy more than 1 million public charging stations by 2025, the Commission will ensure their full implementation and enforcement and consider whether they need strengthening. Furthermore, together with this Communication, the Commission presents the implementing and delegated acts on the **EU Smart Readiness Indicator,** as a tool to measure the smart readiness of buildings and raise the awareness of building owners and occupants.

For the **latest sustainable products and products which integrate renewable energy**, such as from photovoltaics, the Commission will **map challenges encountered** by these products on the single market and consider ways to remove identified barriers, including via mutual recognition. A well functioning Single Market removes regulatory and administrative barriers to cross-border service provision and facilitates mutual recognition of national certification and insurance schemes for renovation and energy efficiency specialists.

Synergies for renovation become evident when scaled up to **district and community approaches**. Aggregating projects at this level may lead to zero-energy or even **positive energy districts**[61] (e.g. advanced district heating and cooling systems with large potential for renewables and waste-heat recovery). These offer cheaper ways to decarbonise heating and cooling and can offer system efficiencies at an industrial scale by fuel switch, increased flexibility and thermal storage, and creating space for nature. In addition to a more rational and aesthetic use of space, a district-based approach can allow improving old dwellings with **reduced accessibility and mobility services**.

Energy communities generate, consume, store and sell energy, and can offer tools for the most vulnerable citizens to lift them out of energy poverty. To exploit their untapped potential as active players in the energy system, the Commission will look closely into the **implementation of the Electricity Market Directive[62] and the Renewable Energy Directive** and use concerted actions to support their progressive creation and diffusion across Member States. The Commission will further explore how to promote energy communities and disseminate good practices[63].

Based on broad and inclusive engagement of inhabitants through cooperative structures and one-stop shops with a wide variety of useful advice, such district approaches can transform entire neighbourhoods and create new business opportunities. **Exemplary district renovation**

[60] Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency

[61] Where several buildings optimise energy consumption across buildings as well as the wider energy system. These districts are characterised by an annual positive energy balance and integrate with local renewable energy, local storage (both electricity and heat), smart energy grids, demand-response, cutting-edge energy management (electricity, heating and cooling), user interaction/involvement and ICT. "Positive Energy Districts" projects are developed through Horizon 2020 Lighthouse Projects (https://smartcities-infosystem.eu/scc-lighthouse-projects) and in projects where Member States cooperate through the Urban Europe Joint Programming Initiative (JPI) (https://jpi-urbaneurope.eu/ped), as well as through the Strategic Energy Technologies Plan that has a dedicated group to support such projects.

[62] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU

[63] This can include lessons learnt from EU-funded projects, see for instance https://www.rescoop.eu/the-rescoop-model

projects[64] could be included in the national recovery plans and pave the way to a new wave of decarbonised districts.

Member States, regions and local authorities should further seize the opportunity to finance investments in a local context as part of the **territorial instruments** within the European Regional Development Fund (ERDF) and the European Agricultural Fund for Rural Development (EAFRD): Integrated Territorial Investments (ITI's), Community-Led Local Development (CLLD) and LEADER. Further, urban authorities can draw on the mandatory minimum allocation of the ERDF to sustainable urban development implemented on the ground through integrated urban and territorial development strategies.

At the local level, the **Covenant of Mayors** supports a new coalition of willing cities ready to commit to ambitious pledges on building renovation. This process could feed into the future updates of Long-Term Renovation Strategies and result in aggregated green procurement to which mayors commit under the Covenant. The **Big Buyers for Climate and Environment** project further fosters collaboration between big public buyers such as cities, regions, hospitals, central purchasing bodies, utilities, towards piloting and uptaking new technologies in areas such as zero emission construction sites.

In addition, the Commission will engage all relevant stakeholders, including through the **Climate Pact** and the **High Level Forum on construction**, with supportive actions to regenerate European neighbourhoods through cultural, economic and social vitality.

3.7. THE NEW EUROPEAN BAUHAUS: MATCHING STYLE WITH SUSTAINABILITY

The Renovation Wave is not only about looking into existing building stock. It is the start of a forward-looking process to match sustainability with style. As announced by President von der Leyen in her State of the Union speech on 16 September 2020, the Commission will launch the New European Bauhaus to nurture a new European aesthetic that combines performance with inventiveness.

The New European Bauhaus will act as an incubator for innovation and creativity to drive sustainable design across Europe and beyond, that is also appealing and affordable for citizens. It will network practitioners from across disciplines and mobilise creative minds to reimagine how sustainable living could and should be in the future.

The New European Bauhaus is an interdisciplinary project that will create experimental spaces where art, culture, science and technology can mingle, imagine, test and demonstrate new solutions helping to develop new lead markets. It will have two dimensions. The first is a network of thinkers, planners, architects, entrepreneurs, students and citizens working

[64] Such as the ones participating in the proposed Horizon Europe Mission on '100 Climate-neutral Cities by 2030 – by and for the citizens'.

together to develop sustainability in style. The second dimension will consist of real existing building projects across the EU.

The New European Bauhaus will also be an accelerator for socially and aesthetically promising green and digital solutions, technologies and products. It will foster innovative solutions in terms of architecture and materials. Nature-based materials such as wood can play a crucial role in the design of the New European Bauhaus as they can have a double benefit: stocking carbon emissions in buildings and avoiding emissions that would have been needed to produce conventional construction materials.

The New European Bauhaus will be set up in three phases: Design, Deliver and Diffuse. From now until summer 2021, the Commission will conduct a broad participatory co-creation process for its "design", with the aim of launching calls for proposals under the next Multi-Annual Framework in all relevant programmes. The "delivery" of the first European Bauhaus' construction or transformation will start in the second half of 2021.

But this will only be the beginning. The goal is to "diffuse" a network of Bauhaus' with different features, always keeping in mind the transformation towards living together sustainably. In a first wave, we would aim at establishing a series of five founding Bauhaus' in 2022 in different EU countries. All projects would deal with the built environment as a whole but should focus on different aspects such as climate challenges, accessibility, social cohesion, digital construction, sustainable bio-resources etc. In a second wave, further Bauhaus' can be added across the EU and even globally.

The project will be co-steered by an advisory board of external experts including scientists, architects, designers, artists, planners and civil society to make sure that the European Bauhaus will keep on track and deliver on the objectives.

4. FOCUS AREAS FOR BUILDING RENOVATION

While the measures described above are designed to unlock the renovation of all buildings, three areas deserve specific attention: **a) tackling energy poverty and worst-performing buildings; b) renovating public buildings, such as administrative, educational and healthcare facilities and c) decarbonising heating and cooling**. These areas should be considered as a priority for policy and financing, because they offer huge potential for increasing renovation rates, while delivering large energy savings and healthier and more comfortable buildings for citizens.

4.1. TACKLING ENERGY POVERTY AND WORST-PERFORMING BUILDINGS

With nearly 34 million Europeans unable to afford keeping their home adequately warm[65], tackling energy poverty is an urgent task for the EU and its Member States. Each year, 800

[65] Data from 2018. Eurostat, SILC [ilc_mdes01]).

000 social homes need renovation, requiring an estimated EUR 57 billion of additional funding[66] per year.

Inefficient buildings are often synonymous with energy poverty and social problems[67]. This often means that people with low incomes have little control over their energy expenditure, causing a vicious circle of high energy bills, arrears[68] and problems with wellbeing and health. People in inefficient buildings are more exposed to cold spells, heatwaves and other impacts of climate change[69]. Inadequate comfort and sanitary conditions in housing and work environments, such as inadequate indoor temperatures, deficient air quality and exposure to harmful chemicals and materials, contribute to lower productivity, health problems and higher mortality and morbidity.

Poorly performing buildings have a large potential for improvement, but their renovation faces persistent barriers ranging from regulatory obstacles to structural factors. Renovation of social and multi-apartment housing faces additional barriers due to the complex decision-making process[70]. Addressing these barriers call for an integrated approach that also accounts for the social setting and affordability of housing. **Minimum energy performance standards** coupled with financing that limit the monthly net expenditure of the inhabitants can significantly accelerate renovation, as explained in sections 3.1. and 3.2. Accompanying services and technical assistance are essential for the worst-performing buildings.

The Commission will also propose to **expand the use of ESCOs and energy performance contracts**, which proved to work well in some Member States[71], through the upcoming revision of the EED to make renovation affordable for all households, including those with a limited ability to cover upfront costs.

Financing solutions for low-income households for cost neutrality must address rents, energy and operating costs and local taxes through the use of grants, subsidised renovation measures or the use of energy savings for repayment (limiting upfront investment to available grants). Such solutions can be deployed alongside micro-credits backed by a guarantee fund to promote fair cost-sharing between owners and tenants, on-bill financing schemes and on-tax financing schemes. Vulnerable households must be shielded from rent increases that may follow renovations. Offering blended loans and guarantees from public and private sources

[66] Report of the High-Level Task Force on Investing in Social Infrastructure in Europe, January 2018.

[67] For example, the EEFIG has identified studies showing that default rates of mortgages with good Energy Performance Certificate energy ratings can be as low as 0.92%, compared to 1.18% for mortgages with poor Energy Performance Certificate energy ratings (28% higher default rate).

[68] In 2018 30.3 million people were unable to keep up with utility bills, including energy bills, and so were at risk of having their supply cut off.

[69] European Environment Agency, Report No 22/2018: Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe.

[70] See https://ec.europa.eu/jrc/en/publication/energy-efficiency-upgrades-multi-owner-residential-buildings-review-governance-and-legal-issues-7-eu

[71] See the Energy companies in the EU status report of the Joint Research Centre https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106624/kjna28716enn.pdf. As an example, in Estonia, since April 2010, around 1100 multi-apartment buildings were reconstructed (mainly using pre-constructed elements).

through one-stop shops may nurture trust in renovation and ensure certain quality requirements are met[72].

In accordance with the Clean Energy for All Europeans Package, Member States must use their National Energy and Climate Plans and Long-Term Renovation Strategies to identify dwellings of people at risk of energy poverty and develop effective strategies for renovating these as a matter of priority[73]. In parallel to this Communication, the Commission presents **a Recommendation on Energy Poverty[74]** to guide Member States in defining and implementing such strategies to reduce energy poverty. The Commission will further assist them in developing **targeted financial solutions for lower-income households**, together with easier access to essential services, energy audits and energy performance certificates.

Some Long-Term Renovation Strategies are already rolling out a mix of measures to raise awareness among vulnerable target groups and insulation programmes that combine financial and practical support[75]. The **EU Building Stock Observatory**[76]**,** the **EU Energy Poverty Observatory**[77]**, the Horizon Europe Mission on Cities**[78] and the **EU Covenant of Mayors Office**[79] can further assist Member States in taking stock and identifying segments in need, and in linking renovation strategies to social indicators and policies to address energy poverty.

In order to guarantee that local social housing projects have access to all necessary technical capacity, the Commission will launch the **Affordable Housing Initiative**. It will pilot **100 lighthouse renovation districts** in a smart neighbourhood approach and provide blueprints for replication, setting liveability and latest innovations at the forefront. It will mobilise cross-sectoral project partnerships linking them to local actors, including from the social economy, to promote efficient, circular and modular processes, social engagement models to empower residents, inclusive and accesible developments and cultural innovation.

To address the specific challenges in rural and remote locations, the Commission will in 2021 come forward with a **Communication on the Long-Term Vision for Rural Areas** to analyse social and infrastructure aspects in rural areas and examine possible action in the short and medium-term.

The use of **standardised industrial solutions** applied as part of a comprehensive renovation package enable cheaper and quicker renovation with limited impact on the residents and can

[72] Estonia's KredEx Revolving Fund supports combining loans, loan guarantees and grants. The National Revolving Fund for Energy Saving in the Netherlands works in combination with the total rental housing stock expected to reach and average EPC class B by 2021.
[73] In Denmark, the 2018 energy agreement allocates DKK 200 million per year from 2021-2024 to energy savings in buildings. The grant will be awarded to building owners who can demonstrate the highest energy saving potential to ensure grants targetthe least energy efficient segments of the national building stock.
[74] Commission Recommendation C(2020)9600 on Energy Poverty.
[75] BE, Flemish Region. Vulnerable groups qualify for a free energy scan of their homes; over 20,000 such scans are being carried out every year.
[76] https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/eu-bso_en
[77] https://www.energypoverty.eu/
[78] https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/missions-horizon-europe/climate-neutral-and-smart-cities_en
[79] https://www.covenantofmayors.eu/

be of particular relevance in the case of social housing[80]. In this context, the potential of efficiency purchase agreements based on smart measuring of the actual savings achieved should also be piloted and potentally scaled up.

Finally, **social enterprises** are important partners in tackling energy poverty through socially innovative solutions, including energy awareness campaigns, retraining unemployed people to energy poverty advisors or purchasing of energy-efficient appliances to rent out, and they should be fully involved in the renovation wave.

4.2. PUBLIC BUILDINGS AND SOCIAL INFRASTRUCTURE SHOWING THE WAY

Public and privately-owned social infrastructure, public administrative buildings, social housing, cultural institutions, schools, hospitals and healthcare facilities can spearhead the renovation wave, serving as a role model and reference point for the industrialisation of construction and the co-benefits that become immediately visible to the public.

The Commission will **issue guidance on the Energy Efficiency First principle** in early 2021 to help public authorities properly take into account all costs and wider benefits of the investments in the built environment, which could be practically applied in public procurement.

Given the limited scope of existing legislative requirements for renovation of public buildings, the Commission will propose by June 2021 the need to **extend the scope of the requirements to all public administration levels and to increase the annual renovation obligation** as part of the revision of the EED. This will be done in conjunction with the phased introduction of **minimum energy performance standards in the context of the revision of the EPBD** by the end of 2021**.** The Commission will also develop comprehensive guidance on sustainable public investments through procurement.

Moreover, by June 2022, the Commission will look into the possibility to develop **green public procurement criteria** for public buildings such as office buildings and schools related to life-cycle and climate resilience and based on Level(s). The Commission will also issue, based on the upcoming assessment of the Long-Term Renovation Strategies, **indicative milestones for the renovation** of public and private service buildings for 2030 and 2040 with a view to decarbonising the building stock by 2050.

4.3. DECARBONISING HEATING AND COOLING

Modernising the heating and cooling systems of buildings is essential to decarbonise the EU building stock, to deploy local renewable energy potential and to reduce the EU's dependence on imported fossil fuels. In the EU, heating, cooling and domestic hot water account for

[80] Examples of projects to industrialise building renovation processes that have been co-funded by the EU: Transition Zero, Energiesprong, 4RinEU, BERTIM, MORE-CONNECT, P2Endure, Pro-GET-OnE, DRIVE 0.

around 80% of energy consumed in residential buildings. Two thirds[81] of this energy comes from fossil fuels. Many systems are old and inefficient and half are beyond their service lifetime. Stand-alone systems provide up to 88% of heat supply and district heating systems supply the remaining 12%[82].

According to the impact assessment for the Climate Target Plan 2030, the residential sector would have to undergo the highest reduction in energy demand in heating and cooling, ranging between -19% to -23%, compared to 2015. The annual rate of replacement of heating equipment would have to reach around 4% in both the residential and services sector. During the same time period, the share of renewables and waste heat would have to increase to 38-42%[83] to reach the objective.

The Renewable Energy Directive[84], together with the Energy Efficiency Directive[85], require the Member States to provide the Commission with their assessment of how to decarbonise their heating and cooling systems using their potential for efficiency, renewables and waste heat and include this in the **comprehensive assessment** due by December 2020.

Based on a thorough impact assessment, the **revision of the Renewable Energy Directive** by June 2021 will consider **strengthening the existing renewable heating and cooling target** in accordance with the proposed higher climate target ambition for 2030 and introducing a requirement to use **minimum levels of renewables in buildings**. The revision will explore a **toolbox of measures** to promote advanced heating and cooling, including highly efficient low-temperature renewable and waste heat and cold technologies and the development of local and regional heating and cooling plans, and to address the barrier of high upfront capital investment. It will also promote the use of **decarbonised gases** that can create local synergies with municipal and agricultural waste recycling and industrial sectors. The Commission will propose measures for facilitating access to **waste and renewable heat and cold[86]**.

Based on a thorough impact assessment, the **revision of the Energy Efficiency Directive by June 2021** will strengthen the capacities of public authorities to prepare, finance and implement comprehensive **heating and cooling planning in coordination with renovation projects**. Local authorities and utility companies have an important role, in creating the necessary regulatory framework, market conditions and skills and in preparing a robust pipeline of projects to finance the modernisation of heating and cooling systems. Integrated

[81] In 2017, the overall share of fossil fuels in buildings' heating was 76,5%.
[82] However, in Denmark and Latvia, up to 60% of heat is supplied by district heating systems.
[83] Compared to 33% in the baseline scenario.
[84] Article 15(7) of the Rewable Energy Directive (2018/2001/EU).
[85] Article 14 of the Energy Efficiency Directive (2012/27/EU).
[86] Many complex, industrial and service buildings, such as data centres, currently release excess heat or cold into the environment which could be reused. Among the areas with noteworthy potentials are shopping malls and datacentres.

planning, specific information about the building stock and energy supply options are necessary to decarbonise heating and cooling in neighbourhoods and at the national level[87].

The **Ecodesign Framework Directive**[88] **and the product-specific eco-design and energy labelling**[89] **delegated and implementing acts** will further be developed to continue promoting high environmental standards, providing the public with information on the most efficient products and steering financial incentives towards the highest performing ones.

The Commission encourages public authorities to consider using energy and CO_2 taxation to promote the switch-away from fossil fuels. The upcoming impact assessments for the revision of key climate and energy legislation envisaged by June 2021 will look into extending the use of emission trading to **include emissions from buildings**.[90] The EU ETS covers at present around 30% of building emissions from heating due to the coverage of district heating as well as electric heating.

5. CONCLUSION

In 10 years, the buildings of Europe will look remarkably different. Buildings will be the microcosms of a more resilient, greener and digitalised society, operating in a circular system by reducing energy needs, waste generation and emissions at every point and reusing what is needed. Their roofs and walls will increase the green surface of our cities and improve the urban climate and biodiversity. Within their walls, buildings will host smart and digitalised appliances, providing real time data on how, when and where energy is consumed. Recharging electric vehicles, namely bikes, cars and vans, in residential and office buildings will be a common experience complementing publicly accessible charging infrastructure. Many more Europeans will be prosumers, producing electricity for self consumption or even selling it back to the grid. Fossil fuels will gradually disappear from heating and cooling.

District approaches will unite people and communities. Buildings will be less energy-consuming, more liveable, and healthier for everybody. Cities will become greener and better connected with nature. New jobs and professional profiles will emerge. Europe's construction industry will thrive on the opportunities provided by a sustained rate of renovations and consolidate its global leadership in innovative materials, turning the buildings sector from a carbon source into a carbon sink. Positive effects will spill over to other industrial ecosystems. New and larger markets for green construction and for green loan and mortgage financing will develop.

[87] Underlined by the requirement to carry out by 31 December 2020 comprehensive assessment of the potential for efficient district heating and cooling in line Article 14(1) of and Annex VIII to Directive 2012/27/EU on energy efficiency, as amended by Commission Delegated Regulation (EU) 2019/826. The upcoming second round of the comprehensive assessments should also integrate the requirements laid down in Article 15(7) of the recast Renewable Energy Directive by integrating the assessments of the potentials for using renewable energy and waste heat and cold for heating and cooling.

[88] Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products.

[89] Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1–23)

90 COM(2020)562 final

This Communication sets out a strategy to embrace, accelerate and drive such a transformation in a way that is underpinned by the climate neutrality objective, applies circularity principles, contributes to the Sustainable Development Goals and Europe's competitiveness and protects the right of everyone to have affordable, liveable, accessible and healthy housing while safeguarding cultural heritage.

The Commission will advise and support Member States to plan and implement ambitious measures for renovation in the context of their recovery plans. In the coming months, it will present a comprehensive set of policy and regulatory actions to break down existing barriers holding back renovation, notably through the revision of the Energy Efficiency and Renewable Energy Directives and by strengthening the EU Emissions Trading System in the context of the 2030 follow-up package by June 2021. This will be complemented by a range of further initiatives including the revision of the Energy Performance of Buildings Directive, as set out in the annexed action plan.

Renovation should be a shared project across Europe. The mobilisation and ownership of cities, local and regional authorities, stakeholders, national governments and citizens will be key to sustaining it. The Commission will work in close partnership with the Committee of the Regions and with local and municipal authorities including by using the Climate Pact. It will facilitate the exchange of good practices and mutual inspiration through cross-border networks such as EU committees, concerted actions or expert groups, stakeholder fora, the Covenant of Mayors and the Smart Cities Marketplace.

The Renovation Wave can support recovery for the individuals and economy alike, and pursuing its benefits must be sustained over the long term. The Commission will track progress on renovation through the European Semester and the monitoring and reporting mechanisms set out in the Governance of the Energy Union and Climate Action, in particular through the Technical Working Group on the implementation of the Governance Regulation, with a particular focus on the NECPs and Long-Term Renovation Strategies implementation.

The Commission invites the European Parliament, the Council, the Committee of the Regions, the European Economic and Social Committee, the European Investment Bank, Member States, citizens and all stakeholders to discuss the strategy set out in this Communication and to contribute to the actions needed to step up energy efficient and sustainable renovation of buildings. Working together at all levels, we can make a European Renovation Wave happen.

EUROPEAN
COMMISSION

Brussels, 14.10.2020
COM(2020) 662 final

ANNEX

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to the

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives

{SWD(2020) 550 final}

Annex: The Renovation Wave: key Commission actions and indicative timelines

Strengthening information, legal certainty and incentives for renovation	
Revision of **Energy Performance Certificates** and proposal to introduce **mandatory minimum energy performance standards** for all types of buildings in the EPBD	2021
Revision of requirements on **energy audits** in the EED	2021
Proposal on **Building Renovation Passports** and introduction of **a single digital tool** unifying them with Digital Building Logbooks	2023
Developing a **2050 whole life-cycle performance roadmap** to reduce carbon emissions form buildings and advancing national **benchmarking** with Member States	2023
Reinforced, accessible and more targeted funding supported by technical assistance	
Proposed **strengthened financing for the ELENA** facility from the InvestEU advisory hub and possibly from other European programmes	2021
Consider the introduction of a **'deep renovation' standard** as part of the EPBD revision	2021
Revising the **climate-proofing guidelines** for projects supported by the EU	2021
Supporting **de-risking energy efficiency investments**, and proposing to incorporate **environmental, social and governance (ESG) risks** into the Capital Requirements law and the Solvency II Directive	2021
Reviewing the **General Block Exemption Regulation and Energy and Environmental Aid Guidelines**	2021
Creating green jobs, upskilling workers and attracting new talent	
Supporting Member States to update their national roadmaps for the training of the construction workforce through the **Build Up Skills** Initiative and helping implement the 2020 **European Skills Agenda**	2020
Sustainable built environement	
Reviewing **material recovery targets** and supporting the internal market for	2024

secondary raw materials	
Presenting a **unified EU Framework for digital permitting** and recommending **Building Information Modelling** in public procurement	2021
Supporting **digitalisation in the construction sector** through Horizon Europe, Digital Innovation Hubs and Testing and Experimentation Facilities	2021
Placing an integrated participatory and neighbourhood based approach at the heart of renovation	
Setting up a creative **European Bauhaus** platform to combine sustainability with art and design	2020
Supporting sustainable and decarbonised energy solutions through **Horizon Europe** and the **R&I co-creation space**	2020
Facilitating the development of **energy communities** and **local action** through the European Smart Cities Marketplace	2020
Supporting the development of **climate-resilient building standards**	2020
Tackling energy poverty and worst-performing buildings	
Launching the **Affordable Housing Initiative** piloting 100 renovation districts	2021
Public buildings and social infrastructure showing the way	
Proposing to extend the **requirements for renovation to buildings** in the EED **to all public administration levels**	2021
Based on Level(s), developing **green public procurement criteria related to life cycle and climate resilience** for certain public buildings	2022
Decarbonising heating and cooling	
Developing **ecodesign and energy labelling** measures	2020
Assessing the **extension of the use of emission trading to emissions from buildings**	2021
Revising the RED and the EED and considering strengthening the **renewable heating and cooling target** and introducing a requirement for **minimum proportions of renewable energy in buildings**. Also facilitating access of **waste and renewable heat and cool into energy systems**	2021

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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A new Circular Economy Action Plan
For a cleaner and more competitive Europe

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1. INTRODUCTION

There is only one planet Earth, yet by 2050, the world will be consuming as if there were three[1]. Global consumption of materials such as biomass, fossil fuels, metals and minerals is expected to double in the next forty years[2], while annual waste generation is projected to increase by 70% by 2050[3].

As half of total greenhouse gas emissions and more than 90% of biodiversity loss and water stress come from resource extraction and processing, **the European Green Deal**[4] launched a concerted strategy for a climate-neutral, resource-efficient and competitive economy. **Scaling up the circular economy from front-runners to the mainstream economic players** will make a decisive contribution to achieving **climate neutrality by 2050** and **decoupling economic growth from resource use**, while ensuring the long-term competitiveness of the EU and leaving no one behind.

To fulfil this ambition, the **EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes**, advance towards **keeping its resource consumption within planetary boundaries**, and therefore strive to **reduce its consumption footprint** and **double its circular material use rate in the coming decade**.

For business, **working together on creating the framework for sustainable products** will provide new opportunities in the EU and beyond. This **progressive, yet irreversible transition to a sustainable economic system** is an indispensable part of the **new EU industrial strategy**. A recent study estimates that applying circular economy principles across the EU economy has the potential to increase EU GDP by an additional 0.5% by 2030 creating around 700 000 new jobs[5]. There is a clear business case for individual companies too: since manufacturing firms in the EU spend on average about 40% on materials, closed loop models can increase their profitability, while sheltering them from resource price fluctuations.

Building on the single market and the potential of digital technologies, the circular economy can **strengthen the EU's industrial base** and **foster business creation and entrepreneurship among SMEs**. Innovative models based on a closer relationship with customers, mass customisation, the sharing and collaborative economy, and powered by digital technologies, such as the internet of things, big data, blockchain and artificial intelligence, will not only accelerate circularity but also the dematerialisation of our economy and make Europe less dependent on primary materials.

For citizens, the circular economy will provide **high-quality, functional and safe products, which are efficient and affordable**, last longer and are designed for reuse, repair, and high-quality recycling. A whole **new range of sustainable services**, product-as-service models and digital solutions will bring about a better quality of life, innovative jobs and upgraded knowledge and skills.

This Circular Economy Action Plan provides a future-oriented agenda for achieving a cleaner and more competitive Europe in co-creation with economic actors, consumers, citizens and civil society organisations. It aims at accelerating the

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1 https://www.un.org/sustainabledevelopment/sustainable-consumption-production/
2 OECD (2018), *Global Material Resources Outlook to 2060*.
3 World Bank (2018), *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*.
4 COM(2019) 640 final.
5 Cambridge Econometrics, Trinomics, and ICF (2018), *Impacts of circular economy policies on the labour market.*

transformational change required by the European Green Deal, while building on circular economy actions implemented since 2015[6]. This plan will ensure that the regulatory framework is streamlined and made fit for a sustainable future, that the new opportunities from the transition are maximised, while minimising burdens on people and businesses.

The plan presents a set of interrelated initiatives to establish **a strong and coherent product policy framework that will make sustainable products, services and business models the norm** and **transform consumption patterns so that no waste is produced in the first place**. This product policy framework will be progressively rolled out, while key product value chains will be addressed as a matter of priority. Further measures will be put in place to **reduce waste** and ensure that the EU has a **well-functioning internal market for high quality secondary raw materials**. The capacity of the EU to take responsibility for its waste will be also strengthened.

Europe will not achieve transformative change by acting alone. The EU will continue to **lead the way to a circular economy at the global level**[7] and use its influence, expertise and financial resources to implement **the 2030 Sustainable Development Goals**. This plan aims also at ensuring that the circular economy works for people, regions and cities, fully contributes to climate neutrality and harnesses the potential of research, innovation and digitalisation. It foresees the further development of a **sound monitoring framework** contributing to measuring well-being beyond GDP.

2. A SUSTAINABLE PRODUCT POLICY FRAMEWORK

2.1. Designing sustainable products

While up to 80% of products' environmental impacts are determined at the design phase[8], **the linear pattern of "take-make-use-dispose" does not provide producers with sufficient incentives to make their products more circular**. Many products break down too quickly, cannot be easily reused, repaired or recycled, and many are made for single use only. At the same time, the single market provides a critical mass enabling the EU to set global standards in product sustainability and to influence product design and value chain management worldwide.

EU initiatives and legislation already address to a certain extent sustainability aspects of products, either on a mandatory or voluntary basis. Notably, the Ecodesign Directive[9] successfully regulates energy efficiency and some circularity features of energy-related products. At the same time, instruments such as the EU Ecolabel[10] or the EU green public procurement (GPP) criteria[11] are broader in scope but have reduced impact due to the limitations of voluntary approaches. In fact, there is **no comprehensive set of requirements** to ensure that all products placed on the EU market become increasingly sustainable and stand the test of circularity.

In order to **make products fit for a climate-neutral, resource-efficient and circular economy**, reduce waste and ensure that the performance of front-runners in sustainability

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6 COM(2015) 614 final.

7 SWD(2020) 100.

8 https://op.europa.eu/en/publication-detail/-/publication/4d42d597-4f92-4498-8e1d-857cc157e6db

9 Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, OJ L 285, 31.10.2009, p. 10.

10 Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel, OJ L 27, 30.1.2010, p. 1.

11 https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

progressively becomes the norm, the Commission will propose **a sustainable product policy legislative initiative.**

The **core of this legislative** initiative will be to widen the Ecodesign Directive beyond energy-related products so as to **make the Ecodesign framework applicable to the broadest possible range of products and make it deliver on circularity**.

As part of this legislative initiative, and, where appropriate, through complementary legislative proposals, the Commission will consider establishing **sustainability principles** and other appropriate ways to regulate the following aspects:

- improving product **durability, reusability, upgradability and reparability**, addressing the presence of **hazardous chemicals** in products, and increasing their **energy and resource efficiency**;
- increasing **recycled content in products**, while ensuring their performance and safety;
- enabling **remanufacturing** and **high-quality recycling**;
- reducing **carbon and environmental footprints**;
- restricting **single-use** and countering **premature obsolescence**;
- introducing a **ban on the destruction of unsold durable goods;**
- incentivising **product-as-a-service** or other models where **producers keep the ownership of the product** or the responsibility for its performance throughout its lifecycle;
- mobilising the potential of **digitalisation** of product information, including solutions such as **digital passports, tagging and watermarks;**
- rewarding products based on their **different sustainability performance**, including by linking high performance levels to incentives.

Priority will be given to addressing product groups identified in the context of the value chains featuring in this Action Plan, such as electronics, ICT and textiles but also **furniture** and **high impact intermediary products** such as steel, cement and chemicals. Further product groups will be identified based on their environmental impact and circularity potential.

This legislative initiative and any other complementary regulatory or voluntary approaches will be developed in a way to **improve the coherence with existing instruments regulating products along various phases of their life cycle.** It is the intention of the Commission that the **product sustainability principles will guide broader policy and legislative developments in the future**. The Commission will also increase the effectiveness of the current Ecodesign framework for energy-related products, including by swiftly adopting and implementing a new Ecodesign and Energy Labelling Working Plan 2020-2024 for individual product groups.

The review of the Ecodesign Directive as well as further work on specific product groups, under the Ecodesign framework or in the context of other instruments, will build, where appropriate, on criteria and rules established under the EU Ecolabel Regulation, the Product Environmental Footprint approach[12] and the EU GPP criteria. The Commission will consider the introduction of mandatory requirements to increase the

[12] https://ec.europa.eu/environment/eussd/smgp/PEFCR_OEFSR_en.htm

sustainability not only of goods, but also of services. The possibility to introduce requirements linked to environmental and social aspects along the value chain, from production through use to end of life, will also be carefully assessed, including in the context of WTO rules. For instance, ensuring the accessibility of certain products and services[13] next to contributing to social inclusion can have the added benefit of increasing product durability and reusability.

Furthermore, to support the **effective and efficient application** of the new sustainable product framework, the Commission will:

- establish a common **European Dataspace for Smart Circular Applications**[14] with data on value chains and product information;
- step up efforts, in cooperation with national authorities, on **enforcement of applicable sustainability requirements** for products placed on the EU market, in particular through **concerted inspections and market surveillance actions**.

2.2. Empowering consumers and public buyers

Empowering consumers and providing them with cost-saving opportunities is a key building block of the sustainable product policy framework. To enhance the participation of consumers in the circular economy, the Commission will propose a revision of EU consumer law to ensure that **consumers receive trustworthy and relevant information on products at the point of sale**, including on their **lifespan** and on the **availability of repair services, spare parts and repair manuals.** The Commission will also consider further **strengthening consumer protection against green washing and premature obsolescence,** setting minimum requirements for **sustainability labels/logos** and for **information tools.**

In addition, the Commission will work towards **establishing a new 'right to repair'** and consider **new horizontal material rights for consumers** for instance as regards availability of spare parts or access to repair and, in the case of ICT and electronics, to upgrading services. Regarding the role that **guarantees** can play in providing more circular products, the Commission will explore possible changes also in the context of the review of Directive 2019/771[15].

The Commission will also propose that **companies substantiate their environmental claims** using Product and Organisation Environmental Footprint methods. The Commission will test the integration of these methods in the EU Ecolabel and include more systematically durability, recyclability and recycled content in the EU Ecolabel criteria.

Public authorities' purchasing power represents 14% of EU GDP and can serve as a powerful driver of the demand for sustainable products. To tap into this potential, the Commission will propose **minimum mandatory green public procurement (GPP) criteria and targets in sectoral legislation** and phase in **compulsory reporting to monitor the uptake of Green Public Procurement** (GPP) without creating unjustified administrative burden for public buyers. Furthermore, the Commission will continue to

[13] Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services, OJ L 151, 7.6.2019, p. 70.

[14] COM (2020) 67 final.

[15] Directive (EU) 2019/771/EC of the European Parliament and of the Council of 20 May 2019 on certain aspects concerning contracts for the sale of goods, OJ L 136, 22.5.2019, p. 28.

support capacity building with guidance, training and dissemination of good practices and encouraging public buyers to take part in a "**Public Buyers for Climate and Environment**" initiative, which will facilitate exchanges among buyers committed to GPP implementation.

2.3. Circularity in production processes

Circularity is an essential part of a wider transformation of industry towards climate-neutrality and long-term competitiveness. It can deliver substantial material savings throughout value chains and production processes, generate extra value and unlock economic opportunities. In synergy with the objectives laid out in the Industrial Strategy[16], the Commission will enable greater circularity in industry by:

- assessing options for further promoting circularity in industrial processes in the context of the review of the **Industrial Emissions Directive**[17], including the integration of circular economy practices in upcoming Best Available Techniques reference documents;
- facilitating industrial symbiosis by developing an **industry-led reporting and certification system,** and enabling the implementation of industrial symbiosis;
- supporting the **sustainable and circular bio-based sector** through the implementation of the Bioeconomy Action Plan[18];
- promoting the use of **digital technologies for tracking, tracing and mapping of resources**;
- promoting the uptake of green technologies through a system of solid verification by **registering the EU Environmental Technology Verification scheme** as an EU certification mark.

The new **SME Strategy**[19] will foster circular industrial collaboration among SMEs building on training, advice under the Enterprise Europe Network on cluster collaboration, and on knowledge transfer via the European Resource Efficiency Knowledge Centre.

3. KEY PRODUCT VALUE CHAINS

The sustainability challenge posed by key value chains requires urgent, comprehensive and coordinated actions, which will form an integral part of the sustainable product policy framework outlined in section 2. Those actions will contribute to the response to the climate emergency and will feed into the EU Industrial Strategy, as well as into the forthcoming biodiversity, Farm to Fork and forest strategies. As part of the governance of the sectorial actions, the Commission will cooperate closely with stakeholders in key value chains to identify barriers to the expansion of markets for circular products and ways to address those barriers.

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16 COM(2020) 102.

17 Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control),OJ L 334, 17.12.2010, p. 17.

18 COM(2018) 763 final.

19 COM(2020) 103.

3.1. Electronics and ICT

Electrical and electronic equipment continues to be one of the fastest growing waste streams in the EU, with current annual growth rates of 2%. It is estimated that less than 40% of electronic waste is recycled in the EU[20]. Value is lost when fully or partially functional products are discarded because they are not reparable, the battery cannot be replaced, the software is no longer supported, or materials incorporated in devices are not recovered. About two in three Europeans would like to keep using their current digital devices for longer, provided performance is not significantly affected[21].

To address these challenges, the Commission will present a '**Circular Electronics Initiative**' mobilising existing and new instruments. In line with the new sustainable products policy framework, this initiative will promote longer product lifetimes and include, among others, the following actions:

- regulatory measures for electronics and ICT including **mobile phones, tablets and laptops** under the Ecodesign Directive so that devices are designed for energy efficiency and durability, reparability, upgradability, maintenance, reuse and recycling. The upcoming Ecodesign Working Plan will set out further details on this. **Printers and consumables such as cartridges** will also be covered unless the sector reaches an ambitious voluntary agreement within the next six months;
- focus on electronics and ICT as a **priority sector for implementing the 'right to repair'**, including a right to update obsolete software;
- regulatory measures on **chargers for mobile phones and similar devices**, including the **introduction of a common charger**, improving the durability of charging cables, and incentives to decouple the purchase of chargers from the purchase of new devices;
- improving the collection and treatment of waste electrical and electronic equipment[22] including by exploring options for **an EU-wide take back scheme to return or sell back old mobile phones, tablets and chargers;**
- review of EU rules on **restrictions of hazardous substances in electrical and electronic equipment**[23] and provide guidance to improve coherence with relevant legislation, including REACH[24] and Ecodesign.

3.2. Batteries and vehicles

Sustainable batteries and vehicles underpin the mobility of the future. To progress swiftly on enhancing the sustainability of the emerging battery value chain for electro-mobility and boost the circular potential of all batteries, this year the Commission will propose a **new regulatory framework for batteries**. This legislative proposal will build on the

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20 https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_rt130&plugin=1

21 Special Eurobarometer 503, January 2020.

22 Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), OJ L 197, 24.7.2012, p. 38.

23 Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, OJ L 305, 21.11.2017, p. 8.

24 Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency, OJ L396, 30.12.2006, p. 1.

evaluation of the Batteries Directive[25] and the work of the Batteries Alliance with the consideration of the following elements:

- **rules on recycled content** and measures to improve the **collection and recycling rates of all batteries**, ensure the **recovery of valuable materials** and provide **guidance to consumers**;
- addressing **non-rechargeable batteries** with a view to progressively phasing out their use where alternatives exists;
- **sustainability and transparency requirements for batteries** taking account of, for instance, the carbon footprint of battery manufacturing, ethical sourcing of raw materials and security of supply, and facilitating reuse, repurposing and recycling.

The Commission will also propose to revise the rules on **end-of-life vehicles**[26] with a view to promoting more circular business models by **linking design issues to end-of-life treatment**, considering **rules on mandatory recycled content for certain materials** of components, and **improving recycling efficiency**. Moreover, the Commission will consider the most effective measures to ensure the collection and the environmentally sound treatment of **waste oils**.

From a broader perspective, the forthcoming Comprehensive European Strategy on **Sustainable and Smart Mobility** will look into enhancing synergies with the circular economy transition, in particular by applying product-as-service solutions to reduce virgin material consumption, use sustainable alternative transport fuels, optimise infrastructure and vehicle use, increase occupancy rates and load factors, and eliminate waste and pollution.

3.3. Packaging

The amount of materials used for packaging is growing continuously and in 2017 packaging waste in Europe reached a record – 173 kg per inhabitant, the highest level ever. In order to ensure that all packaging on the EU market is reusable or recyclable in an economically viable way by 2030, the Commission will review Directive 94/62/EC[27] to **reinforce the mandatory essential requirements for packaging** to be allowed on the EU market and consider other measures, with a focus on:

- **reducing (over)packaging and packaging waste**, including by setting targets and other waste prevention measures;
- driving **design for re-use and recyclability of packaging,** including considering restrictions on the use of some packaging materials for certain applications, in particular where alternative reusable products or systems are possible or consumer goods can be handled safely without packaging;
- considering **reducing the complexity of packaging materials**, including the number of materials and polymers used.

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[25] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC, OJ L 266, 26.9.2006, p. 1.

[26] Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles, OJ L 269, 21.10.2000, p. 34.

[27] European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, OJ L 365 31.12.1994, p. 10.

As part of the initiative to harmonise separate collection systems referred to in section 4.1, the Commission will assess the feasibility of EU-wide **labelling that facilitates the correct separation of packaging waste at source**.

The Commission will also establish **rules for the safe recycling into food contact materials** of plastic materials other than PET.

The Commission will also strictly monitor and support the implementation of the requirements of the Drinking Water Directive to **make drinkable tap water accessible in public places**, which will reduce dependence on bottled water and prevent packaging waste.

3.4. Plastics

The **EU Strategy for Plastics in the Circular Economy**[28] has set in motion a comprehensive set of initiatives responding to a challenge of serious public concern. However, as consumption of plastics is expected to double in the coming 20 years, the Commission will take further targeted measures to address the sustainability challenges posed by this ubiquitous material and will continue to promote a concerted approach to tackle plastics pollution at global level as set out in section 7.

To increase uptake of recycled plastics and contribute to the more sustainable use of plastics, the Commission will propose **mandatory requirements for recycled content and waste reduction measures** for **key products such as packaging, construction materials and vehicles**, also taking into account the activities of the Circular Plastics Alliance.

In addition to measures to reduce plastic litter, the Commission will address the **presence of microplastics in the environment** by:

- **restricting intentionally added microplastics** and tackling pellets taking into account the opinion of the European Chemicals Agency;
- developing **labelling, standardisation, certification and regulatory measures** on unintentional release of microplastics, including measures to increase the **capture of microplastics** at all relevant stages of products' lifecycle;
- further developing and harmonising methods for **measuring unintentionally released microplastics**, especially from tyres and textiles, and delivering harmonised data on microplastics concentrations in seawater;
- closing the gaps on **scientific knowledge related to the risk and occurrence** of microplastics in the environment, drinking water and foods.

Furthermore, the Commission will address emerging sustainability challenges by developing **a policy framework on**:

- **sourcing, labelling and use of bio-based plastics,** based on assessing where the use of bio-based feedstock results in genuine environmental benefits, going beyond reduction in using fossil resources;
- **use of biodegradable or compostable plastics,** based on an assessment of the applications where such use can be beneficial to the environment, and of the criteria for such applications. It will aim to ensure that labelling a product as

[28] COM(2018) 28 final.

'biodegradable' or 'compostable' does not mislead consumers to dispose of it in a way that causes plastic littering or pollution due to unsuitable environmental conditions or insufficient time for degradation.

The Commission will ensure the timely implementation of the new Directive on **Single Use Plastic Products**[29] and fishing gear to address the problem of marine plastic pollution while safeguarding the single market, in particular with regard to:

- harmonised interpretation of the products covered by the Directive;
- labelling of products such as tobacco, beverage cups and wet wipes and ensuring the introduction of tethered caps for bottles to prevent littering;
- developing for the first time rules on measuring recycled content in products.

3.5. Textiles

Textiles are the fourth highest-pressure category for the use of primary raw materials and water, after food, housing and transport, and fifth for GHG emissions[30]. It is estimated that less than 1% of all textiles worldwide are recycled into new textiles[31]. The EU textile sector, predominantly composed of SMEs, has started to recover after a long period of restructuring, while 60% by value of clothing in the EU is produced elsewhere.

In the light of the complexity of the textile value chain, to respond to these challenges the Commission will propose **a comprehensive EU Strategy for Textiles**, based on input from industry and other stakeholders. The strategy will aim at strengthening industrial competitiveness and innovation in the sector, boosting the EU market for sustainable and circular textiles, including the market for textile reuse, addressing fast fashion and driving new business models. This will be achieved by a comprehensive set of measures, including:

- applying the **new sustainable product framework** as set out in section 2 to textiles, including developing **ecodesign measures** to ensure that textile products are fit for circularity, ensuring the uptake of secondary raw materials, tackling the presence of hazardous chemicals, and **empowering business and private consumers to choose sustainable textiles** and have **easy access to re-use and repair services**;
- improving the business and regulatory environment for sustainable and circular textiles in the EU, in particular by providing **incentives and support to product-as-service models, circular materials and production processes,** and increasing transparency through **international cooperation**;
- providing guidance to achieve **high levels of separate collection of textile waste**, which Member States have to ensure by 2025;
- boosting the **sorting, re-use and recycling of textiles,** including through **innovation, encouraging industrial applications and regulatory measures** such as extended producer responsibility.

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29 Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, OJ L 155, 12.6.2019, p. 1.

30 EEA Briefing report Nov 2019.

31 Ellen McArthur Foundation (2017), *A new Textiles Economy*

3.6. Construction and buildings

The built environment has a significant impact on many sectors of the economy, on local jobs and quality of life. It requires vast amounts of resources and accounts for about 50% of all extracted material. The construction sector is responsible for over 35% of the EU's total waste generation[32]. Greenhouse gas emissions from material extraction, manufacturing of construction products, construction and renovation of buildings are estimated at 5-12% of total national GHG emissions[33]. Greater material efficiency could save 80% of those emissions[34].

To exploit the potential for increasing material efficiency and reducing climate impacts, the Commission will launch a new comprehensive **Strategy for a Sustainable Built Environment**. This Strategy will ensure coherence across the relevant policy areas such as climate, energy and resource efficiency, management of construction and demolition waste, accessibility, digitalisation and skills. It will promote circularity principles throughout the lifecycle of buildings by:

- addressing the sustainability performance of construction products in the context of the revision of the **Construction Product Regulation[35],** including the possible introduction of **recycled content requirements** for certain construction products, taking into account their safety and functionality;
- promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design[36] and developing **digital logbooks** for buildings;
- using Level(s)[37] to **integrate life cycle assessment in public procurement** and the **EU sustainable finance framework** and exploring the appropriateness of setting of carbon reduction targets and the potential of carbon storage**;**
- considering a revision of **material recovery targets set in EU legislation for construction and demolition waste and its material-specific fractions;**
- promoting initiatives to **reduce soil sealing**, rehabilitate abandoned or contaminated brownfields and increase the safe, sustainable and circular use of **excavated soils**.

Furthermore, the '**Renovation Wave' initiative** announced in the European Green Deal to lead to significant improvements in energy efficiency in the EU will be implemented in line with circular economy principles, notably optimised lifecycle performance, and longer life expectancy of build assets. As part of the revision of the recovery targets for construction and demolition waste, the Commission will pay special attention to insulation materials, which generate a growing waste stream.

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32 Eurostat data for 2016.

33 https://www.boverket.se/sv/byggande/hallbart-byggande-och-forvaltning/miljoindikatorer---aktuell-status/vaxthusgaser/

34 Hertwich, E., Lifset, R., Pauliuk, S., Heeren, N., IRP, (2020), *Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future*.

35 Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC, OJ L 88, 4.4.2011, p. 5.

36 https://ec.europa.eu/docsroom/documents/39984

37 https://ec.europa.eu/environment/eussd/buildings.htm

3.7. Food, water and nutrients

The circular economy can significantly reduce the negative impacts of resource extraction and use on the environment and contribute to restoring biodiversity and natural capital in Europe. Biological resources are a key input to the economy of the EU and will play an even more important role in the future. The Commission will aim at ensuring the sustainability of renewable bio-based materials, including through actions following the Bioeconomy Strategy and Action Plan.

While the food value chain is responsible for significant resource and environmental pressures, an estimated 20% of the total food produced is lost or wasted in the EU. Therefore, in line with the Sustainable Development Goals and as part of the review of Directive 2008/98/EC[38] referred to in section 4.1, the Commission will propose a **target on food waste reduction**, as a key action under the forthcoming EU Farm-to-Fork Strategy, which will address comprehensively the food value chain.

The Commission will also consider specific measures to increase the sustainability of food distribution and consumption. Under the sustainable products initiative, the Commission will launch the analytical work to determine the scope of a legislative initiative on reuse to **substitute single-use packaging, tableware and cutlery by reusable products in food services**.

The new Water Reuse Regulation will encourage circular approaches to water reuse in agriculture. The Commission will **facilitate water reuse and efficiency, including in industrial processes**.

Furthermore, the Commission will develop an **Integrated Nutrient Management Plan**, with a view to ensuring more sustainable application of nutrients and stimulating the markets for recovered nutrients. The Commission will also consider **reviewing directives on wastewater treatment and sewage sludge** and will assess **natural means of nutrient removal such as algae**.

4. LESS WASTE, MORE VALUE

4.1. Enhanced waste policy in support of waste prevention and circularity

Despite efforts at EU and national level, the amount of waste generated is not going down. Annual waste generation from all economic activities in the EU amounts to 2.5 billion tonnes, or 5 tonnes per capita a year, and each citizen produces on average nearly half a tonne of municipal waste. The decoupling of waste generation from economic growth will require considerable effort across the whole value chain and in every home.

Rolling out the sustainable product policy and translating it into specific legislation (see sections 2 and 3) will be key to making progress on waste prevention. In addition, we need to build on, further strengthen and better implement EU waste laws.

EU waste laws have driven major improvements in waste management since the 1970s, supported by EU funds. However, they need to be modernised on an ongoing basis to make them fit for the circular economy and the digital age. As explained in section 3, revision of EU **legislation on batteries, packaging, end-of-life vehicles, and hazardous substances in electronic equipment** will be proposed with a view to

[38] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, OJ L 312, 22.11.2008, p. 3.

preventing waste, increasing recycled content, promoting safer and cleaner waste streams, and ensuring high-quality recycling.

In addition, the Commission will put forward **waste reduction targets** for specific streams as part of a broader set of measures on waste prevention in the context of a review of Directive 2008/98/EC. The Commission will also enhance the implementation of the recently adopted requirements for **extended producer responsibility schemes**, provide incentives and encourage sharing of information and good practices in waste recycling. All this shall serve the objective to significantly reduce total waste generation and halve **the amount of residual (non-recycled) municipal waste by 2030**.

High quality recycling relies on effective separate collection of waste. To help citizens, businesses and public authorities better separate waste, the Commission will **propose to harmonise separate waste collection systems**. In particular, this proposal will address the most effective combinations of separate collection models, the density and accessibility of separate collection points, including in public spaces, taking account of regional and local conditions ranging from urban to outermost regions. Other aspects that facilitate consumer involvement will also be considered, such as common bin colours, harmonised symbols for key waste types, product labels, information campaigns and economic instruments. It would also seek standardisation and the use of quality management systems to assure the quality of the collected waste destined for use in products, and in particular as food contact material.

Additional efforts are necessary to support the Member States in waste management. Half of them are at risk of non-compliance with the 2020 target to recycle 50% of municipal waste. To drive policy reforms, the Commission will organise **high-level exchanges on the circular economy and waste** and **step up cooperation with Member States, regions** and **cities** in making the best use of EU funds. Where necessary, the Commission will also use its enforcement powers.

4.2. Enhancing circularity in a toxic-free environment

EU chemicals policy and legislation, in particular REACH, encourage a shift to 'safe-by-design chemicals' through the progressive substitution of hazardous substances to better protect citizens and the environment. However, the safety of secondary raw materials can still be compromised, for instance, where banned substances persist in recycled feedstock. To increase the confidence in using secondary raw materials, the Commission will:

- support the development of solutions for **high-quality sorting and removing contaminants from waste**, including those resulting from incidental contamination;
- develop **methodologies to minimise the presence of substances that pose problems to heatlh or the environment in recycled materials and articles made thereof**;
- co-operate with industry to progressively develop **harmonised systems to track and manage information on substances** identified as being of very high concern and other relevant substances, in particular those with chronic effects[39],

[39] As identified under Regulation (EC) 1907/2006 and Regulation (EC) 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures,

and substances posing technical problems for recovery operations present along supply chains, and **identify those substances in waste**, in synergy with measures under the sustainable products policy framework and with the ECHA Database on articles containing substances of very high concern;

- propose amending the **annexes to the Regulation on Persistent Organic Pollutants**, in line with scientific and technical progress and the international obligations under the Stockholm Convention;
- improve the **classification and management of hazardous waste** so as to maintain clean recycling streams, including through further alignment with the classification of chemical substances and mixtures where necessary.

The forthcoming **Chemicals Strategy for Sustainability** will further address the interface between chemicals, products and waste legislation and strengthen synergies with the circular economy.

4.3. Creating a well-functioning EU market for secondary raw materials

Secondary raw materials face a number of challenges in competing with primary raw materials for reasons not only related to their safety, but also to their performance, availability and cost. A number of actions foreseen in this Plan, notably introducing requirements for **recycled content** in products, will contribute to preventing a mismatch between supply and demand of secondary raw materials and ensure the smooth expansion of the recycling sector in the EU. Furthermore, to establish a well-functioning internal market for secondary raw materials the Commission will:

- assess the scope to develop further **EU-wide end-of-waste criteria for certain waste streams** based on monitoring Member States' application of the revised rules on end-of-waste status and by-products, and support cross-border initiatives for cooperation to harmonise national end-of-waste and by-product criteria;
- enhance the role of **standardisation** based on the on-going assessment ofexisting standardisation work at national, European and international levels;
- make timely use of the restrictions on the use of **substances of very high concern in articles** for cases where the use of the substance is subject to an authorisation requirement, while continuing to improve enforcement at borders;
- assess the feasibility of establishing a **market observatory for key secondary materials**.

4.4. Addressing waste exports from the EU

The global market for waste is undergoing considerable changes. In the past decade, millions of tonnes of European waste has been exported to non-EU countries, often without sufficient consideration of proper waste treatment. In many cases, waste exports result both in negative environmental and health impacts in the countries of destination, and in loss of resources and economic opportunities for the recycling industry in the EU. Recent import restrictions introduced by some third countries have exposed the

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amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006, OJ L 353, 31.12.2008, p. 1.

overdependence of the EU on foreign waste treatment, but they have also mobilised the recycling industry to increase its capacity and add value to waste in the EU.

In the light of these developments, and considering that illegal shipments of waste remain a source of concern, the Commission will take action with the aim to **ensure that the EU does not export its waste challenges to third countries**. Actions on product design, quality and safety of secondary materials and enhancing their markets will contribute to making **"recycled in the EU"** a benchmark for qualititative secondary materials.

Facilitating preparing for re-use and recycling of waste in the EU will be enhanced by a thorough review of **EU rules on waste shipments**[40]. The review will also aim at **restricting exports of waste that have harmful environmental and health impacts in third countries or can be treated domestically within the EU** by focusing on countries of destination, problematic waste streams, types of waste operations that are source of concern, and enforcement to counteract illegal shipments. The Commission will also support measures at multilateral, regional and bilateral levels to **combat environmental crime notably in the areas of illegal exports and illicit trafficking,** strengthen **controls of shipments of waste,** and improve the sustainable management of waste in these countries.

5. MAKING CIRCULARITY WORK FOR PEOPLE, REGIONS AND CITIES

Between 2012 and 2018 the number of jobs linked to the circular economy in the EU grew by 5% to reach around 4 million[41]. Circularity can be expected to have a positive net effect on job creation provided that workers acquire the skills required by the green transition. The potential of the **social economy**, which is a pioneer in job creation linked to the circular economy, will be further leveraged by the mutual benefits of supporting the green transition and strengthening social inclusion, notably under the Action Plan to implement the **European Pillar of Social Rights**[42].

The Commission will ensure that its instruments in support of skills and job creation contribute also to accelerating the transition to a circular economy, including in the context of updating its **Skills Agenda**, launching a **Pact for Skills** with large-scale multi-stakeholder partnerships, and the Action Plan for Social Economy. Further investment in education and training systems, lifelong learning, and social innovation will be promoted under the **European Social Fund Plus.**

The Commission will also harness the potential of EU financing instruments and funds to support the necessary investments at regional level and ensure that all regions benefit from the transition. In addition to awareness-raising, cooperation and capacity-building, **Cohesion Policy** funds will help regions to implement circular economy strategies and reinforce their industrial fabric and value chains. Circular economy solutions will be tailored to the **outermost regions and islands**, due to their dependence on resource imports, high waste generation fuelled by tourism, and waste exports. The **Just Transition Mechanism**[43] proposed as part of the European Green Deal Investment Plan and InvestEU will be able to support projects focusing on the circular economy.

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40 Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste, OJ L 190, 12.7.2006, p. 1.

41 https://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=cei_cie010&language=en

42 COM(2020) 14 final

43 https://ec.europa.eu/commission/presscorner/detail/en/fs_20_39

The proposed **European Urban Initiative**, the **Intelligent Cities Challenge Initiative**, and **the Circular Cities and Regions Initiative** will provide key assistance to cities. Circular economy will be among the priority areas of the **Green City Accord**.

The **European Circular Economy Stakeholder Platform** will continue to be the place for stakeholders to exchange information.

6. CROSSCUTTING ACTIONS

6.1. Circularity as a prerequisite for climate neutrality

In order to achieve climate neutrality, the synergies between circularity and reduction of greenhouse gas emissions need to be stepped up. The Commission will:

- analyse how the **impact of circularity on climate change mitigation and adaptation** can be measured in a systematic way;
- improve **modelling tools to capture the benefits of the circular economy on greenhouse gas emission reduction** at EU and national levels;
- promote strengthening **the role of circularity in future revisions of the National Energy and Climate Plans** and, where appropriate, in other climate policies.

Next to reducing greenhouse gas emissions, achieving climate neutrality will also require that carbon is removed from the atmosphere, used in our economy without being released, and stored for longer periods of time. Carbon removals can be nature based, including through restoration of ecosystems, forest protection, afforestation, sustainable forest management and carbon farming sequestration, or based on increased circularity, for instance through long term storage in wood construction, re-use and storage of carbon in products such as mineralisation in building material.

To **incentivise the uptake of carbon removal and increased circularity of carbon**, in full respect of the biodiversity objectives, the Commission will explore the development of a **regulatory framework for certification of carbon removals** based on robust and transparent carbon accounting to monitor and verify the authenticity of carbon removals.

6.2. Getting the economics right

Accelerating the green transition requires careful yet decisive measures to steer financing towards more sustainable production and consumption patterns. The Commission has already taken a series of initiatives in this respect, including **integrating the circular economy objective under the EU Taxonomy Regulation**[44], and carrying out preparatory work on **EU Ecolabel criteria for financial products**. **The Circular Economy Finance Support Platform** will continue to offer guidance to project promoters on circular incentives, capacity building and financial risk management. EU financial instruments, such as SME guarantees under the current framework and InvestEU as of 2021, mobilise private financing in support of the circular economy. The Commission has also proposed a new **own resource for the EU budget based on the amount of non-recycled plastic packaging waste**. In addition, the Commission will:

[44] The EU classification system for environmentally sustainable activities: https://eur-lex.europa.eu/legal-content/en/HIS/?uri=CELEX%3A52018PC0353

- enhance disclosure of environmental data by companies in the upcoming **review of the non-financial reporting** directive;
- support a **business led initiative to develop environmental accounting principles** that complement financial data with circular economy performance data;
- encourage the **integration of sustainability criteria into business strategies** by improving the corporate governance framework;
- reflect objectives linked to the circular economy as part of the **refocusing of the European Semester** and in the context of the forthcoming revision of the **State Aid Guidelines in the field of the environment and energy**;
- continue to encourage the broader application of well-designed **economic instruments,** such as **environmental taxation, including landfill and incineration taxes, and** enable Member States to use **value added tax (VAT) rates** to promote circular economy activities that target final consumers, notably repair services[45].

6.3. Driving the transition through research, innovation and digitalisation

European businesses are frontrunners in circular innovations. The **European Regional Development Fund**, through smart specialisation, **LIFE** and **Horizon Europe** will complement private innovation funding and support the whole innovation cycle with the aim to bring solutions to the market. Horizon Europe will support the development of indicators and data, novel materials and products, substitution and elimination of hazardous substances based on "safe by design" approach, circular business models, and new production and recycling technologies, including exploring the potential of chemical recycling, keeping in mind the role of digital tools to achieve circular objectives. **Marie Sklodowska Curie Actions** can in addition support development of skills, training and mobility of researchers in this area.

Digital technologies can track the journeys of products, components and materials and make the resulting data securely accessible. The **European data space for smart circular applications** referred to in section 2 will provide the architecture and governance system to drive applications and services such as product passports, resource mapping and consumer information.

The European Institute of Innovation and Technology will coordinate innovation initiatives on circular economy in collaboration with universities, research organisations, industry and SME's within the **Knowledge and Innovation Communities**.

The **regime for intellectual property** needs to be fit for the digital age and the green transition and support EU businesses' competitiveness. The Commission will propose an **Intellectual Property Strategy** to ensure that intellectual property remains a key enabling factor for the circular economy and the emergence of new business models.

[45] Subject to the outcome of the on-going legislative procedure.

7. LEADING EFFORTS AT GLOBAL LEVEL

The EU can only succeed if its efforts drive also the global transition to a just, climate-neutral, resource-efficient and circular economy. There is a growing need to advance discussions on defining a "Safe Operating Space' whereby the use of various natural resources does not exceed certain local, regional or global thresholds and environmental impacts remain within planetary boundaries.

For countries with an EU accession perspective, our closest neighbours in the South and the East, emerging economies and key partners across the world, the new sustainable models will open up business and employment opportunities, while strengthening the ties with European economic actors[46].

To support a global shift to a circular economy, the Commission will:

- building on the European Plastics Strategy, lead efforts at international level to reach a **global agreement on plastics**, and promote the uptake of the EU's circular economy approach on plastics;
- propose a **Global Circular Economy Alliance** to identify knowledge and governance gaps in advancing a global circular economy and take forward partnership initiatives, including with major economies;
- explore the feasibility of defining a **'Safe Operating Space'** for natural resource use and consider initiating discussions on an **international agreement on the management of natural resources**;
- build a stronger **partnership with Africa** to maximise the benefits of the green transition and the circular economy;
- ensure that **Free Trade Agreements** reflect the enhanced objectives of the circular economy;
- continue promoting the circular economy in the **accession process with the Western Balkans**, and in the context of **bilateral, regional and multilateral policy dialogues, fora and environmental agreements**, as well as of pre-accession assistance and neighbourhood, development and international cooperation programmes, including the International Platform on Sustainable Finance;
- step up **outreach activities**, including through the European Green Deal diplomacy and the Circular Economy missions, and work with EU Member States to enhance coordination and joint efforts for a global circular economy.

8. MONITORING PROGRESS

In line with the European Green Deal and the 2020 Annual Sustainable Growth Strategy[47], the Commission will **reinforce the monitoring of national plans and measures to accelerate the transition to a circular economy as part of refocusing the European Semester** process to integrate a stronger sustainability dimension.

[46] SWD(2020) 100.
[47] COM (2019) 650 final.

The Commission will also update the **Monitoring Framework for the Circular Economy**[48]. Relying on European statistics as much as possible, new indicators will take account of the focus areas in this action plan and of the interlinkages between circularity, climate neutrality and the zero pollution ambition. At the same time, projects under Horizon Europe and Copernicus data will improve circularity metrics at various levels not yet reflected in official statistics.

Indicators on resource use, including consumption and material footprints to account for material consumption and environmental impacts associated to our production and consumption patterns will also be further developed and will be linked to monitoring and assessing the progress towards decoupling economic growth from resource use and its impacts in the EU and beyond.

9. CONCLUSION

The transition to the circular economy will be systemic, deep and transformative, in the EU and beyond. It will be disruptive at times, so it has to be fair. It will require an alignment and cooperation of all stakeholders at all levels - EU, national, regional and local, and international.

Therefore, the Commission invites EU institutions and bodies to endorse this Action Plan and actively contribute to its implementation, and encourages Member States to adopt or update their national circular economy strategies, plans and measures in the light of its ambition. Furthermore, the Commission will recommend including the circular economy among the topics for discussion on the future of Europe and a regular theme of citizens' dialogues.

[48] https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework

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Brussels, 11.3.2020
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ANNEX

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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A new Circular Economy Action Plan

For a cleaner and more competitive Europe

ANNEX

Key actions	**Date**
A SUSTAINABLE PRODUCT POLICY FRAMEWORK	
Legislative proposal for **a sustainable product policy initiative**	2021
Legislative proposal **empowering consumers in the green transition**	2020
Legislative and non-legislative measures establishing a new "**right to repair"**	2021
Legislative proposal on substantiating **green claims**	2020
Mandatory Green Public Procurement (GPP) criteria and targets in sectoral legislation and phasing-in **mandatory reporting on GPP**	as of 2021
Review of the **Industrial Emissions Directive**, including the integration of circular economy practices in upcoming Best Available Techniques reference documents	as of 2021
Launch of an **industry-led industrial symbiosis reporting and certification system**	2022
KEY PRODUCT VALUE CHAINS	
Circular Electronics Initiative, **common charger solution,** and **reward systems to return old devices**	2020/2021
Review of the Directive on the **restriction of the use of certain hazardous substances in electrical and electronic equipment** and guidance to clarify its links with REACH and Ecodesign requirements	2021
Proposal for a new **regulatory framework for batteries**	2020
Review of the rules on **end-of-life vehicles**	2021
Review of the rules on proper treatment of **waste oils**	2022
Review to reinforce the **essential requirements for packaging** and **reduce (over)packaging and packaging waste**	2021
Mandatory requirements on **recycled plastic content** and **plastic waste reduction measures** for key products such as packaging, construction materials and vehicles	2021/2022
Restriction of **intentionally added microplastics** and measures on **unintentional release of microplastics**	2021

Policy framework for **bio-based plastics and biodegradable or compostable plastics**	2021
EU Strategy for Textiles	2021
Strategy for a Sustainable Built Environment	2021
Initiative to **substitute single-use packaging, tableware and cutlery by reusable products in food services**	2021
LESS WASTE, MORE VALUE	
Waste reduction targets for specific streams and other measures on **waste prevention**	2022
EU-wide **harmonised model for separate collection of waste and labelling** to facilitate separate collection	2022
Methodologies to track and minimise the presence of substances of concern in recycled materials and articles made thereof	2021
Harmonised information systems for the presence of substances of concern	2021
Scoping the development of further **EU-wide end-of-waste and by-product criteria**	2021
Revision of the rules on **waste shipments**	2021
MAKING THE CIRCULAR ECONOMY WORK FOR PEOPLE, REGIONS AND CITIES	
Supporting the circular economy transition through the **Skills Agenda**, the forthcoming **Action Plan for Social Economy**, **the Pact for Skills** and the **European Social Fund Plus.**	as of 2020
Supporting the circular economy transition through **Cohesion policy funds, the Just Transition Mechanism** and **urban initiatives**	as of 2020
CROSSCUTTING ACTIONS	
Improving measurement, modelling and policy tools to capture **synergies between the circular economy and climate change mitigation and adaptation** at EU and national level	as of 2020
Regulatory framework for the **certification of carbon removals**	2023
Reflecting circular economy objectives in the revision of the guidelines on **state aid in the field of environment and energy**	2021

Mainstreaming circular economy objectives in the context of the rules on **non-financial reporting**, and initiatives on **sustainable corporate governance** and on **environmental accounting**	2020/2021
LEADING EFFORTS AT GLOBAL LEVEL	
Leading efforts towards reaching a **global agreement on plastics**	as of 2020
Proposing a **Global Circular Economy Alliance** and initiating discussions on an **international agreement on the management of natural resources**	as of 2021
Mainstreaming circular economy objectives in **free trade agreements**, in other **bilateral, regional and multilateral** processes and agreements, and in **EU external policy funding instruments**	as of 2020
MONITORING THE PROGRESS	
Updating the **Circular Economy Monitoring Framework** to reflect new policy priorities and develop further **indicators on resource use**, including **consumption and material footprints**	2021

EUROPEAN
COMMISSION

Brussels, 15.9.2021
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COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

New European Bauhaus

Beautiful, Sustainable, Together

Table of Contents

1. Introduction

The New European Bauhaus expresses the EU's ambition of creating beautiful, sustainable, and inclusive places, products and ways of living. It promotes a new lifestyle where sustainability matches style, thus accelerating the green transition in various sectors of our economy such as construction, furniture, fashion and in our societies as well as other areas of our daily life.

The aim is to provide all citizens with access to goods that are circular and less carbon-intensive, that support the regeneration of nature and protect biodiversity.

The New European Bauhaus (NEB) is a project of hope and perspectives. It brings a cultural and creative dimension to the European Green Deal to enhance sustainable innovation, technology and economy. It brings out the benefits of the environmental transition through tangible experiences at the local level. It improves our daily life.

This can only happen if people from different backgrounds and areas think and work together in a participatory way. That is why the Commission started the project with a six month co-design phase where everybody could contribute with ideas, visions, examples and challenges for the New European Bauhaus.

This Communication presents the concept of the New European Bauhaus based on the findings from the co-design phase and lays out the next steps. More details on the co-design process can be found in Annex 1.

To achieve the New European Bauhaus goals, the Commission will continue to build a **movement** of interested people and organisations. For the implementation, the Commission **combines relevant EU initiatives and proposes a set of new actions and funding possibilities** that are summarised in Chapter 5 of this Communication. They cover for example:

- The creation of the NEB Lab to grow the community and prepare policy actions
- Seed funding for transformative NEB projects in the EU Member States
- Funding for social housing projects that follow the New European Bauhaus values
- A new approach to the Commission's own building strategy
- The co-creation of green transition pathways for the construction and the textiles ecosystems
- Calls for Start Ups and citizen initiatives
- A yearly New European Bauhaus Festival and Prize
- eTwinning and DiscoverEU 2022 on the topic of the New European Bauhaus

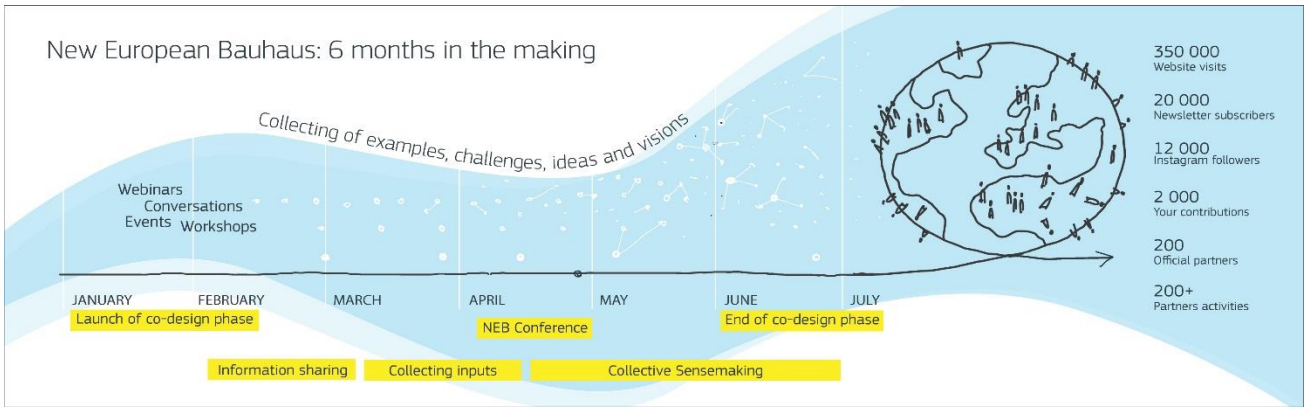
Change will not happen from one day to another. The New European Bauhaus will **create the space to explore and test** policy, funding and other tools for designing and building a better everyday life for all generations.

2. Building on co-design: A transformational project by all of us for all of us

As a first step of this participatory project, the Commission reached out to civil society and stakeholders as part of the co-design phase. After the announcement of the project by President Ursula von der Leyen in September 2020[1], this **co-design phase** was an open invitation for anyone to say what the New European Bauhaus should be about, to share the challenges it should address and ideas and expertise on how this can be done[2]. The concept of the New European Bauhaus is based on the various inputs received during this phase.

The co-design process relied on interested people, organisations, political institutions and companies to organise events, conversations and workshops. The official **Partners of the New European Bauhaus[3]** have contributed to multiply the messages and activities. Eighteen thinkers and practitioners formed a **New European Bauhaus high-level roundtable** to act as a sounding board for the initiative and to give their input on a regular basis[4]. The first ever **Conference on the New European Bauhaus in April 2021** was the culmination of this global conversation, with some 8,000 online participants from around the world, highlighting the need for the movement to connect globally.

Most of the activities took place in EU countries, but there is also a growing interest in other parts of the world; whether in the close neighbourhood or in South and North America. To underline the global dimension of the project, the Commission also invited explicitly contributions from beyond the EU .



[1] New European Bauhaus: Commission launches design phase (europa.eu)
[2] Co-designing the New European Bauhaus (europa.eu)
[3] Partners (europa.eu)
[4] High-level roundtable (europa.eu)

The New European Bauhaus is growing on fertile ground, where buildings, public spaces, businesses and social practices, cultural activities and education programmes are beacons of the initiative and inspire new ideas. The first **New European Bauhaus prize**[5] was launched as part of the co-design phase to put the **spotlight** on those inspirational examples and ideas by young talents.

3. The shape of the New European Bauhaus

3.1. From the historical movement to the New European Bauhaus

Several features of the historical Bauhaus served as a basis for the vision of the New European Bauhaus.

The historical Bauhaus, created in 1919, emerged at a moment **of deep transformation** – towards the modern societal and industrial era. The founders addressed this transformation in their work and searched for solutions of the new challenges. It quickly became a global cultural movement. It brought together artists, designers, architects and craftspeople. This **transdisciplinary** approach is also very much needed for the challenges of our times where we are once more facing profound transformation.

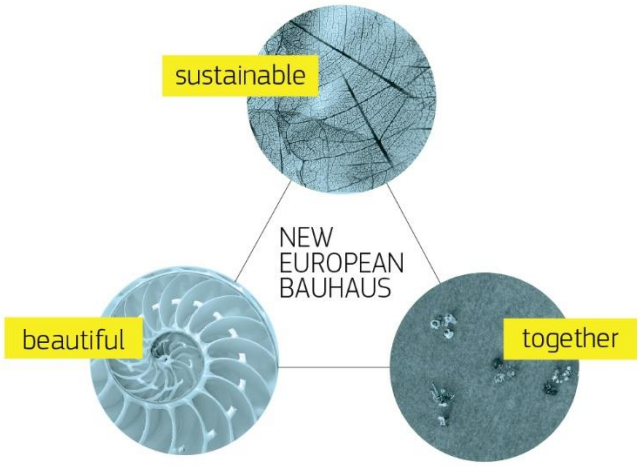
Like one hundred years ago, the question of **innovative materials** remains key. While at that time, the solution was cement and steel, we now need to explore more nature-based materials that are produced sustainably, and to develop low-carbon production solutions for all materials. This goes for construction as well as for fashion, design, furniture, transport or energy. A triangle of values

A triangle of **three core inseparable values** guides the New European Bauhaus:

- **sustainability**[6], from climate goals, to circularity, zero pollution, and biodiversity,
- **aesthetics**, quality of experience and style, beyond functionality,
- **inclusion**, valorising diversity, equality for all, accessibility and affordability

[5] 2021 Prizes (europa.eu)

[6] For the purpose of the New European Bauhaus initiative, "sustainability" is understood as "environmental sustainability".



The challenge is to address all three values simultaneously to develop the creative solutions that best address people's needs at a lower overall cost.

3.2.Three key principles

Three key principles, emerging from the co-creation process were taken up by the Commission and should guide the New European Bauhaus:

- Combination of global and local dimension
- Participation
- Transdisciplinarity

3.2.1. A multilevel approach: from global to local

The New European Bauhaus endorses **a multilevel approach to transformation – from global to local**. Climate change and the green transition bring challenges that should be addressed globally. At the same time, it is at the local level that change is happening and makes sense for people[7]. The New European Bauhaus therefore addresses different levels of the transformation, from the global to the neighbourhoods, village and city.

Delivering on the New European Bauhaus means reaching out to local areas, following a **place-based approach**. Successful small-scale projects show that transformative initiatives, no matter their size, are doable for everyone, everywhere. The New European Bauhaus will explore ways to support **small-scale initiatives** by individuals, neighbourhoods and local communities.

This cannot be limited to the European Union. The New European Bauhaus will reach out further beyond European borders over time with the aim of spreading its principles of sustainability, inclusion and aesthetics globally.

[7] This local context has multiple facets which, once combined, may determine the quality of life in the place: proximity to a rewarding job market, access to various types of infrastructures and facilities, affordability of housing, etc.

3.2.2. A participatory approach

The European Commission is a strong advocate of a participatory approach, as evidenced by the on-going Conference on the Future of Europe, which has the vocation to deepen and sustain engagement with citizens. The Commission will continue to listen to and work together with those on the ground and explore together where policy, funding and other tools are really making a difference. This will mainly happen in the NEB Lab. The participatory approach **involves civil society and people of all ages and in all their diversity**, including women (under-represented in certain key sectors) and disadvantaged groups[8]. This necessary focus on inclusion aims at leaving no one behind and acknowledges that the most creative solutions are born from collective thinking. New solutions should solve everyday problems and improve the quality of life for all.

3.2.3. A transdisciplinary approach

The New European Bauhaus is about bridging silos between viewpoints and professions. Culture and technology, innovation and design, engineering, craft, the arts and science working hand in hand have the power to create a better tomorrow.

The coronavirus pandemic has demonstrated that, more than ever, integrated approaches are needed to tackle the complex problems our planet and our society face. Meaningful transformation requires bringing in many different competences and knowledge. Working and learning across disciplines facilitates a cross-fertilisation of ideas, knowledge, skills and methods.

3.3.Thematic axes of the transformative path

Creating a movement means working with people and their interests, needs and motivations. The analysis of the input received during the co-design phase identified four thematic axes that the Commission decided to follow during the implementation of the New European Bauhaus.



[8] This includes persons at a higher risk of poverty, marginalisation and/or discrimination, such as young and older people, people with disabilities, lesbian, gay, bisexual, trans, non-binary, intersex and queer (LGBTIQ) people and people with a minority racial or ethnic background, like the Roma, and religious minorities.

3.3.1. Reconnecting with nature

Contributions have pointed out to more awareness and more willingness to address climate change (mitigation and adaptation) and to reduce exposure to pollution.

What people feel as a need to reconnect with nature, including for health and well-being, is supported by research: greater opportunities for contact with green public spaces translate into better health indices for the population and reduce income-related health inequalities[9]. Nature-based solutions in cities can help addressing floods and other extreme weather events while making the built environment more attractive.

Climate action is no longer seen as an abstract fight, but as an integral part of our daily lives that can improve air, water and soil quality and overall living conditions. This experience has been reinforced during the pandemic where our living spaces got limited and where people rediscovered their cities, villages, green spaces. The pandemic underlined the direct link between nature protection and physical and mental health for all of us.

There is a need to go beyond a human-centred to a **life-centred perspective**, getting inspired by nature and learning from it. The ways are manifold: from making cities greener and using sustainably sourced nature-based materials to innovative solutions based on "mimicking" elements found in nature; from taking care of the soil to re-using or recycling waste; from building urban green corridors for active mobility to rethinking transport infrastructure.

The reconnection to nature starts at a young age. Millions of young people have called for more action for a better planet and woken up our environmental consciousness. The contributions of the co-design phase highlight the crucial role **education and culture play in the shift of paradigm towards new behaviour and values**. Educating and empowering children and young people in a participatory way to understand, experience and embrace sustainability and inclusion will create strong connections to nature for the future generations.

[9] See EEA Report No 21/2019, Chapter 3 on "Healthy environment, healthy lives: how the environment influences health and well-being in Europe"

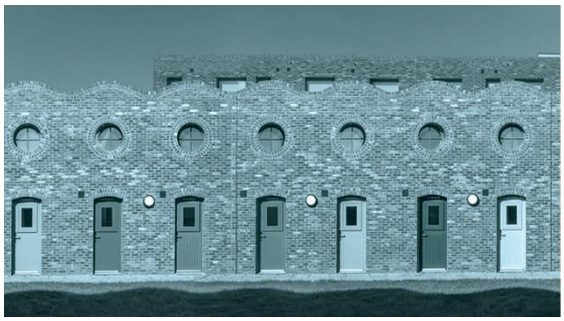


3.3.2. Regaining a sense of belonging

The New European Bauhaus movement is about our collective and private experiences. Building bridges between people is a strong aspiration expressed by contributors.

It implies encouraging intergenerational solidarity, developing links between education and the arts in local environments, improving our common spaces and places to meet. The proximity economy, with concepts like the "15 minute cities"[10] for citizens to access key services and amenities within walking distance, is also a way to strengthen connections and foster healthy, sustainable, active mobility.

Cultural assets (heritage, arts, local craft, know how, etc.), natural assets (landscapes, natural resources, etc.) as well as social assets (social economy enterprises, local organisations and associations etc.) make a place unique. Cultural life, arts events, concerts are opportunities for connection and social interaction, the binding element that creates a sense of belonging.



3.3.3. Prioritising the places and people that need it the most

The co-design phase showed that the New European Bauhaus must be inclusive. This does not relate only to people but also to the places where they live.

Beautiful and sustainable solutions have to **be affordable and accessible for all**. Due consideration should be given to the specific situation of groups and individuals who are the most vulnerable, for instance, at risk of exclusion or poverty or experiencing homelessness. For example, 800 000 social housing units (5% of the total social housing stock) require renovation per year, and 450 000

[10] 15-Minute City (15minutecity.com)

new social homes are needed annually in the EU[11]. Disadvantaged groups are at greater risk of energy poverty and air pollution and have less access to public transport.

Inclusion also implies pursuing a **Design for All approach** to remove accessibility barriers to the built and virtual environments and to goods and services.

The New European Bauhaus clearly goes beyond large city centres and encompasses places in all their diversity, including small villages, rural areas, shrinking cities, degenerated city districts and de-industrialised areas. This calls for territorial development **avoiding spatial segregation** of social groups to create **a sense of togetherness**. The various parts of a city, a village or neighbourhood should be connected. Missing **connections between rural and urban areas** should be addressed. **Digitally connecting people** is an essential enabler for independent living, access to information, or attending cultural events as we experienced during the COVID-19 pandemic.

Delivering access to digital connectivity to all people[12] is an essential enabler for independent living and being actively involved in the green transition, access to information, or attending cultural events as we experienced during the COVID-19 pandemic.



3.3.4. The need for long-term, life-cycle thinking in the industrial ecosystem.

Respondents in the co-design phase identified a clear need for more circularity to **tackle unsustainable use of resources and waste**, including uses for obsolete buildings or infrastructures. Addressing these challenges concerns the entire industrial ecosystem, from production to delivery and consumption, with a circular economy mind-set.

For example, re-use, regeneration, life extension and transformation of existing buildings should be prioritised over the construction of new buildings whenever

[11] Boosting investment in social infrastructure in Europe - Publications Office of the EU (europa.eu) https://op.europa.eu/en/publication-detail/-/publication/d3129b80-6f7c-11e8-9483-01aa75ed71a1/language-en/format-PDF

[12] https://digital-strategy.ec.europa.eu/en/policies/digital-compass

feasible. . Circular, sustainable design and architecture should become the new normal.

Recovered and renewable materials should be better recognised by all relevant disciplines and become part of design paradigms. The use of sustainably produced and procured nature-based building materials, such as wood, bamboo, straw, cork or stone should be improved. New production technologies should help reduce the carbon footprint of steel or cement, recycle otherwise wasted textiles and accelerate the green transition of energy intensive industries.

New business models, bioeconomy, social economy approaches and Design for Sustainability[13] can support the transformation of sectors such as textiles, tourism, waste management or energy production. The **digital transition** will play a systemic role in the development and implementation of the New European Bauhaus. Digital tools e.g. 5G, Artificial Intelligence, data-based tools, robotics and 3-Dimensional printing technologies or digital twins in the construction industry, can improve the sustainability performance of materials, products and buildings.

4. Delivering the New European Bauhaus

The Commission, in cooperation with the European Parliament and the other EU institutions as well as with the Member States, wants to create an **enabling framework** of the New European Bauhaus, integrated with the sustainable development goals (SDGs) and with relevant EU policies and initiatives. This enabling framework is designed to create a space to develop and test policy and funding instruments for the transformation of our societies and economy.

13 https://www.routledge.com/Design-for-Sustainability-A-Multi-level-Framework-from-Products-to-Socio-technical/Gaziulusoy/p/book/9781032089959

This framework is first of all about **achieving more with the policies and funding instruments that we have already**. **Synergies among existing and planned EU policies or programmes** should be intensified so that they can support the New European Bauhaus objectives. They can all contribute to a cultural project bringing together sustainability, inclusion and aesthetics in the places where people live and in the way they live.

The New European Bauhaus triggers issues that cannot be adequately addressed by a single instrument and which often "fall between the cracks".

In addition, the New European Bauhaus puts in place **specific and dedicated actions** that will help make the transformation happen.

This first delivery framework will evolve in the light of the results, through iterative assessments and reviews.

4.1.Working with the New European Bauhaus Community: the NEB Lab

In order to support the implementation of the New European Bauhaus, the Commission will establish the **NEB Lab,** the "think and do tank" to co-create, prototype and test the tools, solutions and policy actions that will facilitate transformation on the ground. The Lab will function as an "accelerator and connector".

Starting with the High Level Round Table and the official partners, the Lab will pursue its community-building journey to embrace the concrete projects inspired by the New European Bauhaus - whether supported by EU funds or by other initiatives – and connect them for mutual support and learning. It will also link up with established communities already working on relevant topics and reach out to politics, industry and society to bridge silos and experiment how they can work together.

While setting up the enabling infrastructure, including a digital platform, the Commission will invite the New European Bauhaus community to cooperate on the following topics and develop concrete recommendations:

- ***Labelling strategy:*** How to characterise and recognise concrete initiatives to match the ambition of the New European Bauhaus? What makes a project a New European Bauhaus project? How can an EU New European Bauhaus label be integrated with access to funding for projects?

- ***Innovative funding:*** Can crowdfunding be usefully combined with public financing to reach out to grassroots initiatives and improve project selection? What approach could best mobilise private funding, including from philanthropists, to support New European Bauhaus projects? How to incentivise investors in various sectors such as real estate, tourism infrastructures, etc. to embrace the ambition of the New European Bauhaus? How can the social economy support the New European Bauhaus?

- ***Regulatory analysis and experimentation:*** How can the regulatory framework support the development of New European Bauhaus projects in construction, energy intensive industries, mobility, proximity and social economy, cultural and creative industries, tourism, textiles? How can the NEB make a full use of new technological development including the digital transformation? What are the remaining obstacles and regulatory bottlenecks? How can public procurement and regulatory simplification promote New European Bauhaus priorities at the European, national and regional level? Can regulatory experimental settings be envisaged in cooperation with Member States and local authorities to test new regulatory approaches driving more ambition along the New European Bauhaus axis?

- ***Key performance indicators*** How can the success of the New European can be measured both in 2024 and 2030? What are the deliverables that we want to see at the different stages of the project? How can we evaluate the results in a meaningful way?

The Commission will follow up on the results of the work in the NEB Lab with further action as well as initiatives involving the Member States, the European Parliament, the Committee of the Regions and other partners. It will monitor and analyse developments, facilitate connections between stakeholders, collect and validate positive results and findings. It will identify new topics to explore through the Lab and contribute to the adaptation of the EU support framework over time.

4.2.A threefold transformation

Considering the many stories, conversations and essays collected during the co-design phase, three leverage points have been identified, where specific actions should be implemented: (i) making change happen *in specific places* on the ground, (ii) the need for *doing things differently* in making innovation happen, including by improving our skills and methods and (iii) the need for adapting the

intentions and the *way of thinking* that is behind our actions.[14] The support and funding instruments are designed around these three points.

Creating a sense of community and showcasing innovation is key for the New European Bauhaus. In order to allow visibility for the change makers, to share and debate progresses and results, and to foster the engagement of citizens, the Commission will convene a '**New European Bauhaus Festival**' for the first time in spring 2022.

It will be a gathering – both physical and virtual - for the entire community to meet, debate, share, learn and celebrate.

The Festival will include three components:

- A **Forum** with debates to shape the project. It will gather thinkers, policy makers and practitioners in a global conversation from science and technology to culture and education, from regional and local development to international perspectives;
- A **Fair** to showcase projects, prototypes and outputs contributing to the New European Bauhaus and award the New European Bauhaus prize;
- A **Fest** with a cultural programme combining physical and virtual exhibitions, performances and art works.

The first edition of the festival will take place in Brussels and will be organised and financed by the European Commission. From 2023 onwards, based on the experience from the first edition, the Commission will envisage a concept for a yearly event that should ideally include places in- and outside the EU

4.2.1. Transformation of places on the ground

[14] http://revistas.unisinos.br/index.php/sdrj/article/view/sdrj.2021.141.02

Changes should happen in specific places and in as many places as possible, at the levels of homes, neighbourhoods, urban and rural areas, physical and virtual meeting spaces. The successful deployment of the New European Bauhaus will require an effective learning and sharing from innovative and emblematic projects. Putting such "pilot demonstrators" in the spotlight spurs enthusiasm to engage and repeat. At the same time, initiative often comes from the grassroots actors, and support for small-scale projects will also be needed.

The European Commission will

- launch calls for proposals, starting in September 2021 to **select innovative pilot projects** that are emblematic of the New European Bauhaus values, including dedicated calls under Horizon Europe on **lighthouse demonstrators** and on **social, affordable and sustainable housing districts demonstrators.** In 2022, additional New European Bauhaus demonstrators will be supported by **cohesion policy's European Urban initiative[15].** Beyond 2022, the approach will be pursued through synergies with the activities launched under the **Horizon Europe Missions[16];**

The Commission's building strategy

The Commission has started integrating all three dimensions of the New European Bauhaus in the development of its presence and actions in the places where it services are established. In Brussels, those values will be implemented in the renovation of the Commission Visitors' Centre, and the Commission will propose a partnership in the design of the new European Quarter Urban planning to the relevant authorities of the Brussels region. Consultations are to be launched in autumn 2021 and will ensure a citizens dialogue around the European neighbourhood. The New European Bauhaus values will also be implemented in the new construction and refurbishment projects proposed by the Commission for the Joint Research Centre sites' in Sevilla and Geel.

- provide **technical assistance to support interested stakeholders,** such as regional and local administrations, to develop and deliver New European Bauhaus projects, with a first focus on citizen engagement and interdisciplinary methods for project incubation and co-design;

- introduce a dedicated **urban development financial instrument** leveraging EU and private investment to support New European Bauhaus projects in Member States. Beyond project financing, it will also grant support for training and project implementation;

15 Explanatory MEMO: European Urban Initiative- POST 2020 (Europa.Eu)
16 Missions in Horizon Europe | European Commission (europa.eu)

- explore how to best **support small scale projects** building on the work of the European Institute for Innovation and technology[17].

- establish a **New European Bauhaus Seal of Excellence** to highlight projects of high quality that could not be financed by EU programmes because of budgetary constraints. The Seal of Excellence can be seen as a first step towards a **New European Bauhaus label**. Selected projects will be integrated in the New European Bauhaus community and promoted towards other potential funders.

Beyond Commission-led initiatives, the funding of transformative New European Bauhaus projects will require strong cooperation with Member States. The place-based and community-led local development approaches of cohesion policy can promote New European Bauhaus projects at the regional and local level with the participation of local communities.

The European Commission will invite Member States to:

- introduce the New European Bauhaus in their socio-economic and territorial development strategies and to reflect their commitment to support and mainstream the New European Bauhaus in the implementation of **cohesion policy** 2021-2027 as part of the Partnership Agreements and relevant operational programmes;

- take up the New European Bauhaus financial instrument to finance projects on the ground

- mobilise **the relevant parts of their recovery and resilience plans** (e.g. on renovation or infrastructures) on New European Bauhaus transformative projects.

4.2.2. Transformation of the enabling environment for innovation

New European Bauhaus transformation depends on the industrial ecosystems, from construction to lifestyle and creative industries, from materials to business models, from digital to farming, to provide tailored and affordable solutions. As the design phase has shown, innovation plays a key role. This is not only innovation in the sense of new technologies, but can also be a combination of new and traditional technics or a new adaptation of local crafts and knowledge.

The diversity and complexity of relevant legislation and the length of administrative processes can become a challenge for transformation projects and even an obstacle to innovation. Innovative approaches should be tested and

[17] The European Institute of Innovation and technology has launched a Call for Proposals for Citizens engagement aligned with New European Bauhaus initiative. The aim is to work on activities where citizens are not only asked to identify relevant challenges of their city, but also empowered to co-create together potential solutions in an ideation process (https://www.eiturbanmobility.eu/launch-of-cross-kic-new-european-bauhaus-call-for-proposals-for-citizen-engagement /)

implemented in experimental settings in close cooperation with Member States national, regional and local authorities.

The effective use of new materials, production process and other tools, will require (re-)skilling, also through Vocational Education and Training, in several sectors and on different levels.

The Commission will:

- co-create, by 2022, **transition pathways** towards (i) a green, digital and resilient construction ecosystem through the *High Level Forum on Construction*, (ii) a green, digital and resilient ecosystem on proximity and social economy, to complement the EU Action Plan on social economy, and (iii) a green, digital and resilient textiles ecosystem, to complement the EU strategy on textiles;

- develop a **self-assessment tool** to measure to what extent a project is sustainable, inclusive and aesthetic and help to identify where improvement is possible. This would combine all existing standards, rules and guidance in the relevant areas. In addition, develop digital tools for e-learning and assessment to support the use of the Level(s) framework that promotes **life-cycle and whole life carbon assessment** for the environmental performance of buildings

- mobilise further the **Horizon Europe programme** to support the New European Bauhaus through research and innovation. The Commission will organise a **high-level workshop on "research and innovation for the New European Bauhaus'** to bring together leading experts to provide a forward-looking research and innovation agenda supporting the New European Bauhaus and feed into the co-creation process of future Horizon Europe Work Programmes;

- mobilise **the European Institute of Innovation and Technology**[18] (EIT) and **the European Innovation Council** [19](EIC) capacities to launch a first set of coordinated calls for proposals to address the key innovation challenges that will emerge from the transformation projects on the ground;

- integrate the New European Bauhaus among the priorities of the **LIFE Programme**[20] to support in particular projects promoting circularity, zero pollution and biodiversity;

- mobilise the **Single Market Programme[21] and its COSME pillar** [22] to support business partnerships **in the lifestyle sector** (fashion, design, furniture etc.)

[18] European Institute of Innovation & Technology (EIT) (europa.eu)
[19] European Innovation Council (europa.eu)
[20] The LIFE Nature and Biodiversity and LIFE Circular Economy and Quality of Life sub-programmes LIFE (europa.eu)
[21] Single Market Programme | European Commission (europa.eu)
[22] COSME. Europe's programme for small and medium-sized enterprises. | Internal Market, Industry, Entrepreneurship and SMEs (europa.eu)

between designers, manufacturers, craftsmen and -women and technology providers (Worth Partnership Project)[23] and to support **partnerships on Social Economy and Local Green Deals**[24];

- foster trans-disciplinary innovation for sustainability, inclusion and well-being among the cultural and creative sectors under the **Creative Europe Programme**, notably through Creative Innovation Labs;

- mobilise **Digital Innovation Hubs** in the relevant sectors (including the construction sector) to develop real and virtual environments and experiences involving deep digital technologies (AI, High Performance computing, big data) to support the New European Bauhaus;

- propose, as from 2021, topics and priorities contributing to the New European Bauhaus initiative in the **Digital Europe Work Programmes;**

- promote **innovative procurement** in the context of the New European Bauhaus to foster an approach based on quality, sustainability, inclusion rather than just cost, including through the "Big Buyers" initiative[25];

4.2.3. Diffusion of new meanings

Inspiring a movement starts with values. It is essential to work with those who reflect on, study and convey our values, such as artists, social scientists, educators and education institutions and youth organisations.

Artists and creative professionals from all fields have long contributed to raise awareness of the socio-economic and environmental challenges of our times. Their critical stance and challenging works on contemporary society can act as eye-openers and help reshape our future world. This is also true for the notions of aesthetics and beauty, for which there are no universal standards or canons any more.

In close collaboration with the Education for Climate Coalition (*), the Commission will launch a call for expression of interest for places of education and knowledge (from public libraries to schools and universities) to develop their own New European Bauhaus projects. The Commission will connect these projects and provide them visibility. A dedicated New European Bauhaus prize in 2023 will allow the best projects to shine. (https://education-for-climate.ec.europa.eu/_en)*

Together with education, training and youth organisations, cultural and creative industries and sectors are new sources of smart, sustainable and inclusive growth and jobs. Their contribution to innovation is increasingly driven by non-technological factors such as creativity, design and new organisational processes or business models and cooperation. This is why sustainability is a major focus for EU youth and education

[23] WORTH Partnership Project (worthproject.eu)
[24] Add link to the call if ready to launch by 14 September
[25] https://bigbuyers.eu/

policy, including higher education and support framework, allowing many synergies with the New European Bauhaus initiative.

The Commission will:

- propose to include under **Erasmus +** a dedicated priority on the New European Bauhaus in the **2022 call for Alliances for innovation[26],** targeting both higher education and vocational education and training sectors and propose a priority for the New European Bauhaus in the Erasmus+ **European Youth Together 2022** call for projects supporting transnational partnerships for youth organisations

- propose to support through Creative Europe **'artists' residencies** and other types of place-bound cultural activities in spaces identified or labelled by the New European Bauhaus;

- organise the **New European Bauhaus prize** annually, highlighting different dimensions of the New European Bauhaus each year;

- develop a **peer learning** action to help local authorities to integrate and implement **quality principles in the built environment** as developed by the Davos process[27] and the Member States' expert group[28] established under the New European Agenda for Culture. ;

- focus the **eTwinning 2022[29]annual theme on topics related to the New European Bauhaus**

- **propose topics** related to the New European Bauhaus as part of the thematic priorities **for the European Innovative Teaching Award 2022**

- link the annual theme of the **2022 DiscoverEU action[30]** to the New European Bauhaus**;**

- for the **European Solidarity Corps 2022 annual call**, propose projects that can contribute to the New European Bauhaus initiative.

5. Next steps

The New European Bauhaus will build on the strength of its growing community. Over the past six months, the initiative gathered enthusiasm and thousands of ideas, which this communication builds upon. The mobilisation of interested actors will continue and the conversation will widen both across Europe and beyond, in

[26] It targets cooperation between a wider range of stakeholders: students, universities, companies, NGOs, civil society, etc.)
[27] See Davos Baukultur Quality System - Davos Declaration 2018
[28] The final report of the expert group on high- quality architecture and built environment for everyone will be published in the second half of September 2021
[29] eTwinning - Homepage
[30] DiscoverEU | European Youth Portal (europa.eu)

cooperation with the European External Action Service, European Union Delegations as well as the interested international organisations and networks. In this respect, synergies with relevant policy and cooperation frameworks will be identified in particular in the EU's neighbourhood.

The European Commission will count on the cooperation of the European Parliament, the Council, the Committee of the Regions and the European Economic and Social Committee to raise awareness and promote the debate in their constituencies, mobilise citizens and private sector actors and share available resources to support the New European Bauhaus.

The cooperation of Member States and of the public authorities at international, national, regional and local levels, including participation of civil society and representatives of diverse communities, will be crucial. From the promotion of participatory co-design processes to the ability to support the financing of local transformation projects, the New European Bauhaus will require strong cooperation across this multilevel governance framework.

As a starting point, Member States will be invited to entrust an entity as a contact point for the New European Bauhaus initiative to connect and coordinate efforts in their respective country and participate in an EU wide informal network for exchange of information and experience.

The European Commission will report on the progress of the initiative in 2022.

Annexes:

1. Report on the co-design phase
2. Mobilising EU programmes
3. New European Bauhaus policy ecosystem

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