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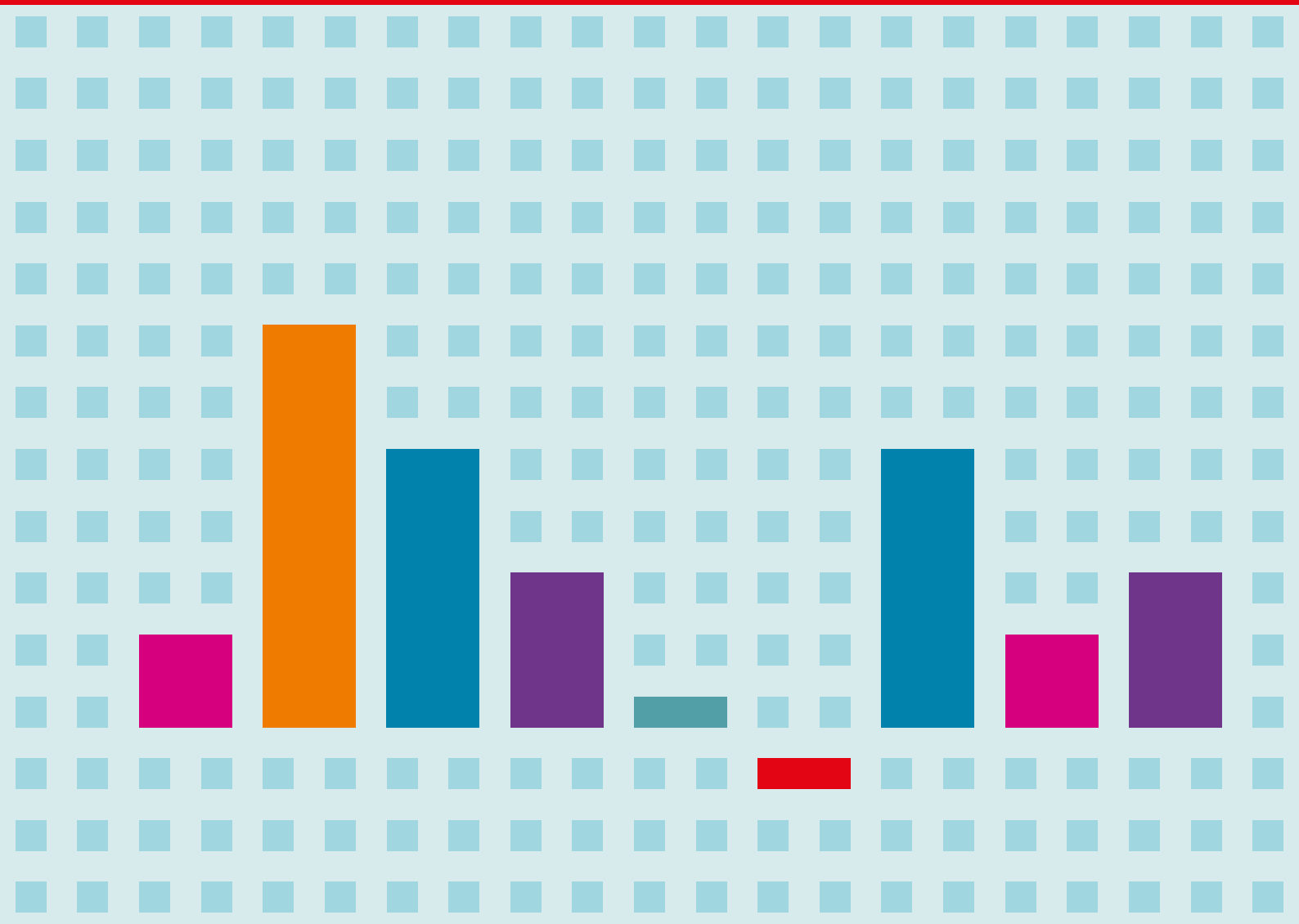

HOW TO SPEND IT

A proposal for a European Covid-19 recovery programme

Jérôme Creel, Mario Holzner, Francesco Saraceno, Andrew Watt and Jérôme Wittwer[1]

Executive summary

- The **Recovery Fund recently proposed by the EU Commission** marks a sea-change in European integration. Yet it **will not be enough** to meet the challenges Europe faces. There has been much public debate about financing, but little about the sort of **concrete** projects that the EU should be putting public money into.
- Here **we propose a 10-year, €2tn investment programme** focusing on public health, transport infrastructure and energy/decarbonisation.
- **It consists of two pillars**. In a **national pillar** Member States – broadly as in the Commission proposal – would be allocated €500bn. Resources should be focused on the hardest-hit countries and front-loaded: we suggest over a three-year horizon.
- The bulk of the money – €1.5tn – would be devoted to finance **genuinely European projects**, where there is an EU value added. We describe a series of flagship initiatives that the EU could launch in the fields of public health, transport infrastructure and energy/decarbonisation.
- We call for a strengthened **EU public health agency** that invests in health-staff skills and then facilitates their flexible deployment in emergencies, and is tasked with ensuring supplies of vital medicines (**Health4EU**).
- We present costed proposals for two ambitious transport initiatives: a dedicated European high-speed rail network, the **Ultra-Rapid-Train**, with four-routes cutting travel times between EU capitals and regions, and, alternatively, an integrated **European Silk Road** initiative that combines transport modes on the Chinese model.
- In the area of energy/decarbonisation we seek to **"electrify" the Green Deal**. We call for funding to accelerate the realisation of a smart and integrated electricity grid for 100%-renewable energy transmission (**e-highway**), support for complementary battery and green-hydrogen projects, and a programme, modelled on the SURE initiative, to **co-finance member-state decarbonisation and Just Transition policies**.
- The crisis induced by the pandemic, coming as it does on top of the financial and euro crises, poses a huge challenge. The response needs to take account of the longer-run structural challenges, and above all that of climate change. The European Union should rise to these challenges in the reform of an **ambitious medium-run recovery programme, appropriately financed**. An outline of such a programme is set out here by way of illustration, but many permutations and options are available to policymakers.

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1 Introduction

Covid-19 has wrecked the European (and the world) economy. The EU Commission is forecasting a massive hit to growth in 2020: -7.4% in the EU 27, -7.7% in the Euro Area, and even more substantial losses, approaching 10%, in the hardest-hit countries (Greece, Italy, Spain).

The short-term emergency response to the crisis has rested primarily on the shoulders of EU Member States. This is hardly surprising, as tools for common management of the business cycle are lacking and efforts to institute them will take time – and in the past have largely proved unsuccessful. Nevertheless, Europe has not been idle in the first weeks of the pandemic. European institutions have facilitated as much as possible the response by member states. In March the ECB stepped up its QE program and introduced a new pandemic support program (PEPP). The program was extended in June to last until at least 2022, so that in the short-to-medium run European member states (especially those with the highest risk of widening interest rate spreads) will have not to fear market pressure as deficit and debt ratios rise.

The Commission suspended the fiscal rules and softened state aid regulation, to ensure that these do not obstruct the policies pursued by member states. And it has proposed, and the Council has approved, a €540bn package of "special purpose" preferential loans: the SURE program aimed at labour market related expenditures, the ESM Covid line for health care, and an EIB loan package aimed at SMEs. Most recently it has proposed a Recovery Fund, whose approval, though, is uncertain. We consider it below.

Whether the massive effort by national governments will work, remains to be seen. Even if a partial recovery is expected in 2021 (partly because of these efforts), this is uncertain and will in any event entail a substantial loss of output and a further increase in unemployment, from still elevated levels in a number of countries. This risks longer-term economic damage and social hardship.

It has been clear for some time that the legacy of the crisis would go beyond a few quarters, and therefore that an effort to strengthen the recovery needed to be put in place, in addition to the short-term measures to underpin demand. A sustained boost over several years would help stabilise expectations, would be appropriate given the difficulties of ramping up spending in the short run and would be in line with other important goals, notably that of decarbonisation. It would show that lessons have been learnt from the mistakes made following the global financial and Euro crisis. This is what a European Recovery Fund should be about.

We make the case for the macroeconomically substantial boost that is needed over the medium run to come primarily from the EU level, given the constraints that many member states face in sustaining demand with expansionary national policies. If substantial European support (going well beyond soft loans via the SURE programme, etc.) is not forthcoming there is a real risk of the Euro Area disintegrating, as countries, in many cases those already hard hit by the Euro crisis, are forced to shutter their industries while those with more fiscal leeway can see their companies through the crisis. We also argue that a genuinely European approach is needed in some areas in order to maximise the impact and coherence of the measures themselves.

1.1 Volume of a recovery fund

The size of the recovery fund (RF) is ultimately a normative and political question, but some macroeconomic orientations can be given.

A bottom-up approach based on readily identifiable infrastructure needs quickly leads to a potential project volume – over a ten- or twenty-year period – running into the trillions. For instance, for Germany – which has suffered from sustained weakness of public investment – a

group of economists (Bardt et al. 2019; Dullien et al., 2020) called before the pandemic for a €450bn investment programme over a ten year period (around 1.3% of current annual German GDP a year). Already before the recent crisis the EIB (2016) identified very substantial annual investment shortfalls, including €130bn for R&D, 100bn energy, 80bn transport, 65bn digital, 10bn education facilities, 90bn environment. For energy and related infrastructure needed for decarbonisation alone the EIB recently called for a 1 percentage point increase of GDP in investment (EIB, 2019).

Turning to the political debate, a considerable number of proposals have been made. The Spanish government proposed a fund of €1.5tn. The French and German governments recently proposed a Recovery Fund issuing only grants to particularly affected Member States of €500bn, whereby the time frame for the disbursement of these funds is left open (Presse- und Informationsamt der Bundesregierung, 2020). The European Parliament has recently (12 May) passed, with a large majority, a resolution calling for a €2tn boost to investment; this figure, though, incorporates induced private-sector investment and would consist of grants and loans (European Parliament, 2020). Prior to the pandemic the European Commission had proposed a €1tn investment programme – albeit one combining funded public investment with induced private-sector investment – as part of a European Green Deal.

The proposal on which member states will negotiate in the coming weeks is the one put forward by the Commission on 27 May 2020 (European Commission, 2020a). The plan takes on board the substance of the Merkel-Macron statement, and embeds the RF in the EU budget, which would be used as a guarantee to raise €750bn on financial markets. According to the proposal these funds will then be transferred (€500bn) or lent (€250bn) to Member States using existing EU programs (such as structural and cohesion funds) and following national recovery plans drawn up by the member states and approved by the Commission. The disbursement is to be frontloaded to the period 2021-2024. Reimbursement is foreseen to begin in 2028 for a duration of 30 years. If the Commission will not have succeeded in obtaining own resources (such as a digital services tax, plastic tax, or carbon border levy), Member states will need to increase their contribution to the EU budget (in most cases, by just a few decimals of point of GDP per year).

The Commission proposal, if it goes through, will represent a major breakthrough for two reasons: first, it establishes a common macroeconomic stabilisation capacity; second, it establishes the principle that this capacity is used according to need and not according to the size of contributions. While the Recovery Fund is explicitly conceived to be temporary, it can be used as blueprint for future discussions about a permanent Eurozone fiscal capacity.

The question remains whether the size of the Fund is appropriate for the challenges ahead. We believe it is not sufficiently ambitious. By way of example, the Commission has presented a new programme: EU4Health. Yet in spite of the investment shortfall of €70bn per annum it has identified, the Commission has planned a multi-annual budget of just €9.4bn. The difference is too substantial to be filled by national governments, some of whom do not have fiscal margins for manoeuvre.

We consider a programme of grants with a volume of at least €2tn to be economically justified and realistic. While front-loaded, the fund should have a time-horizon of ten years. Importantly, this is €2tn of actual public spending – without making heroic assumptions about the “leveraging” of private sector investment. It is around 1.4% of (2019) GDP per annum. We consider here only grants, rather than loans, to enable a transparent and credible programme with maximum impact to be established; albeit this is not a necessary feature. This is clearly substantially larger than the recovery fund proposed by the Commission. However, our proposal goes beyond economic recovery and contains also spending that is closely related to the Green Deal, for which, as noted earlier, the Commission has already identified investment needs running to trillions of euros. It recognises the multiple shocks that have hit the Union and

particularly some southern European countries, and the need for a longer-term response, with structurally higher public investment; see the debate on secular stagnation and Krugman (2020).

We do not address the financing side in detail in this report, but – in macroeconomic terms – it will be easily possible to raise long-term funding at low nominal (and likely at negative real) interest rates. It provides a safe asset that market actors crave and that the ECB could purchase as part of its monetary policy. Whether this debt is serviced via national contributions (within the MFF) or new EU own resources is of secondary importance here; both are possible and the two can be combined. The obstacles to setting up such a fund are political not macroeconomic.

1.2 A national and a European pillar

Our proposal is for a fund with two pillars.

- A €500 bn fund – broadly along the lines proposed by France and Germany and the Commission – that gives grants to member states targeted at those with the most pressing needs arising from the pandemic.
- A €1,500 bn recovery fund that powers EU-wide measures arising directly but also indirectly out of the pandemic, with an emphasis on structural adaptation and improvement.

The "national pillar" of the fund provides direct support to the hardest hit countries or regions: there could be an explicit facility for municipalities, which would target support where it is most needed, speed up disbursement and might assuage critics in net contributor countries. In accordance with the subsidiarity principle they should be free to spend the money allocated to them largely following national/regional preferences, with only loose guidelines from EU level. Given the existence of an explicit European pillar, the constraints on Member States can and should be less than envisaged by the Commission under its scheme. The key used to disburse the funds in this leg should reflect the scale of the Covid-19-related challenges that member states and regions face. It could adopt the methodology for calculating the maximum financial grant available for each Member State that the Commission has recently proposed (European Commission, 2020b), involving some combination of inverse of GDP per capita and deviation of the unemployment from the EU average, but other elements could be added. As a pragmatic matter we suggest a split of €300 to €200 bn for support for the hardest-hit countries and general member state support respectively; but clearly this parameter can be changed. The money should be made available already in the short run (2021 at the latest) and thus focuses more on addressing the immediate impact of the crisis.

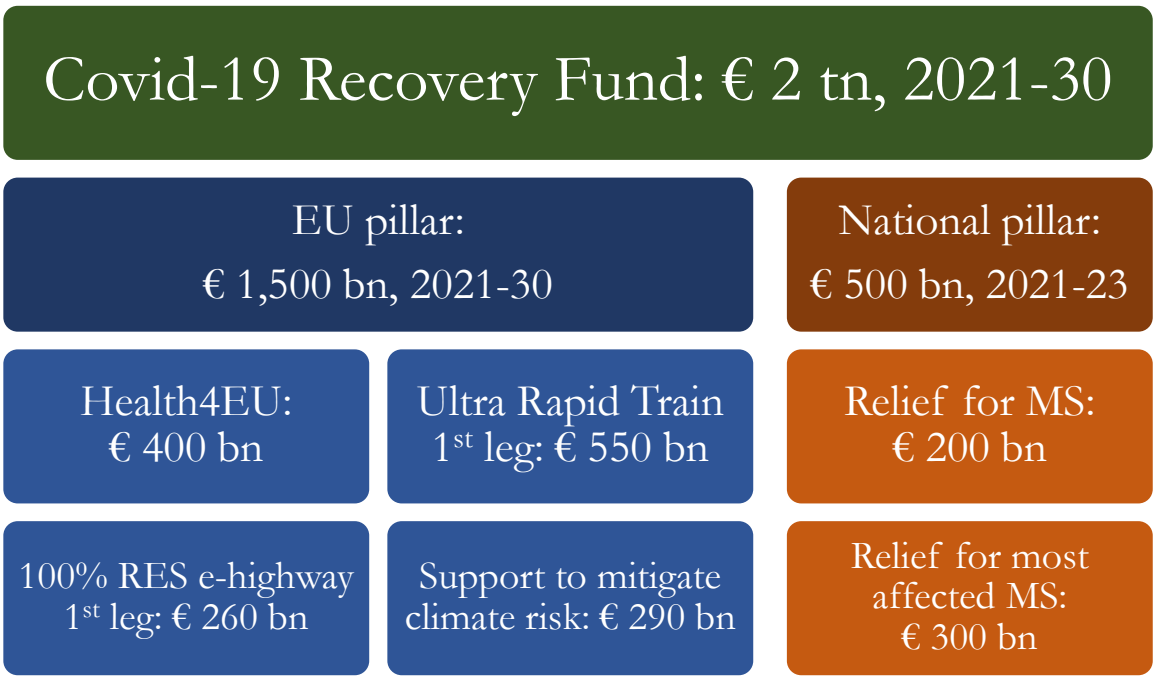
The national pillar of the fund, on its own, has a number of significant limitations, however. There is likely to be disagreement about the appropriate distribution of the resources between countries or regions. Depending on how concentrated the distribution of the spending is, which is desirable from the point of view of effective crisis resolution, citizens of many countries will not perceive the fund – and by extension "Europe" – to be supporting them. In short it will be seen as a charitable act towards the hardest hit. There are likely to be trade-offs between short-term goals (maintaining incomes and employment) and longer-term aims (such as structural transformation and decarbonisation). To the extent that MS do seek to invest with a longer-term horizon there is a risk of duplication and a failure to grasp potential synergies. Many projects may lack the scale to be conducted efficiently and, in a worst-case scenario – 27 countries each embark on a separate green hydrogen project – may end up in competition with each other, each one ultimately failing.

The European pillar of the fund offsets these disadvantages. It promotes EU-wide solutions that are of strategic and longer-term interest, where there is a genuine value added. The task of

this leg of the fund is to finance projects that have a genuine European value added and that address the consequences of the pandemic while also promoting longer term goals, notably regional convergence between EU countries (regions), raising living standards and the quality of life, and meeting Europe's green goals. Every European citizen should see that they have a stake in the projects promoted under the fund.

Projects in this pillar are EU-wide and either European in the narrow sense – e.g. direct establishment of an EU agency, or construction of a pan-European transport infrastructure – or in the broader sense – where, as in the SURE programme, money is made available to Member States for schemes that are of a common type across Europe, although their institutional manifestation and conditions may vary nationally. The European leg is substantially larger than the national one, but spending is spread over a significantly longer time horizon. It gives expression to a common European strategy to exit stronger from the crisis than we entered. Figure 1.1 shows the structure of the proposed fund and the financial orders of magnitude.

Figure 1.1. Suggested architecture of a European Covid-19 Recovery Programme



Note: The EU pillar (time period 2021-2030) includes: Health4EU agency costs of €20 bn p.a. plus health infrastructure support of €20 bn p.a. (i.e. two fifth of the health infrastructure gap of €50 bn p.a. for the countries with tight budgets); Ultra Rapid Train (alternatively a European Silk Road of similar costs) 1st half of the total €1.1 tn, i.e. €550 bn; 100% RES e-highway 1st half of the total €520 bn, i.e. €260 bn; remaining €290 bn in support to member state policies to mitigate climate risk.

Source: Own presentation.

Of course, issues of the "fair" distribution between countries (regions) and different policy goals apply to this pillar of the fund too. Given the national pillar of the fund has a clear focus on addressing the fall-out from Corona, we propose that the European pillar be guided by the three goals of decarbonisation, regional convergence and productivity/living standards of the EU as a whole. Projects are to be prioritised that meet all these considerations (win-win-win). By way of illustration we present in the following sections ideas for "how to spend it" in three main areas:

building blocks of a European health union, pan-European transport infrastructure, and energy saving and decarbonisation.

The proposals are far from being an exhaustive list. They are rather illustrations that aim to give an idea of what might be considered sensible priorities and to indicate some rough orders of magnitude for the associated investment needs and likely benefits. Clearly Europe's investment needs extend beyond the ten-year horizon. Some of the proposals here cannot be fully funded with the suggested €2tn over ten years and will in any case take longer to realise. In the longer term the EU needs to establish a true fiscal capacity of which the RF is only an initial, but a vital, kick-off programme.

2 A New Agency for Restoring Health4EU

The Covid-19 crisis has increased consciousness about the weaknesses of the EU in preventing and coping with a pandemic. The lack of a fully-fledged European health policy has limited the ability to share information on the progress of the pandemic, to ensure fast and relevant supply of medicines and equipment across the EU and to define a coordinated policy response to the pandemic. Its large human, social and economic costs are pushing EU authorities (governments, European Parliament, Commission, national and European health agencies) to foster a European strategy providing a better, faster and safer access to health for all EU citizens - we will call it a Health4EU programme – in the hands of a new federal agency.

There have been several recent health proposals at the EU level. The French-German initiative of May 18, 2020 proposes an EU "Health strategy" to strengthen "strategic health sovereignty". The initiative promotes the increase in EU research and development of vaccines and treatments, common strategic inventories of medicines and equipment, EU common procurements, a taskforce within the European Center for Disease Prevention and Control (ECDC) to elaborate prevention and response plans towards future epidemics, and improved statistical tools to foster health data inter-operability. In its communication of May 27, 2020, the European Commission (2020) presented a new programme: EU4Health, included in Pillar 3 of its new instrument, Next Generation EU. The EU4Health budget of €9.4bn would be devoted to prevention, crisis preparedness, and procurement of vital medicines and equipment. Besides, the new programme may "support capacity building in the Member States (and) fund training programmes for medical and healthcare staff". Geoffard (2020) proposes to incentivise the acceleration of vaccine research by an EU commitment to buy the vaccine patent. He argues that it "would reduce the political risk of expropriation, could foster investment in R&D, and will speed up market access". He estimates the cost at around €60bn.

It is undisputed that there are margins for improvement in the health and long term-care sector across Europe. Fransen et al. (2018) showed that the investment shortfall in this sector was very large. Although public investment in health and long term-care infrastructure in the EU-28 amounted to €75bn in 2015 (0.5 % of GDP), Fransen et al. estimated the investment shortfall per annum between €20 and 70bn, hence a total volume of €260 to €910 bn in 2018-2030. More recently, after the Covid-19 crisis, the European Commission (2020c) assesses the investment needs in the health sector at €70bn per annum, while the investment needs for long term-care amount to €50bn per annum (table 4, p.22). Fransen et al. (2018) also report that the investment shortfall "differs widely across regions" and that the reason behind the shortfall is that local authorities in charge of funding investment in social infrastructure are sometimes subject to tight budget constraints.

As part of the Health4EU programme, we therefore propose to build a single European Health agency from the two existing ones. We propose to increase its funding (by at least €20bn

per year) so as to achieve two main objectives. First, it would increase human capital in the EU via extra-training and an allocation mechanism to help improve the match between local health demand and supply. Second, it would ensure a strategic supply of medicines and equipment. Besides, the Health4EU programme would provide direct cash funding to local authorities for upgrading their health and long-term care infrastructure as one element of a more ambitious European health policy. A budget of €20bn per annum for such transfers would start filling the above-mentioned shortfall in investment. This represents two fifths of the €50 bn that the Commission identifies but does not provide finance for. This would enable the hardest-hit countries lacking fiscal room for manoeuvre to make the needed investments. We justify the creation of a single EU agency in the following, and we also shed some light on US health agencies in order to draw a parallel with the EU.

2.1 A European health policy: the legal context

Health has been anything but central to the EU integration process, at least directly. In the consolidated version of the Treaty on the European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU), the term 'health' appears only once and in an annex[2]. Moreover, health is neither part explicitly of the values of the EU (article 2, TEU) nor of its objectives (article 3, TEU).

Yet access to health contributes indirectly to realising the values (e.g. human dignity, equality) and objectives (e.g. well-being, a high level of protection, scientific and technological advance) of the EU. The EU has also become involved in health policy, as it were through the back door, where it was important for the Single market and the freedom of movement of workers (e.g. ensuring access to health services for mobile workers).

While the subsidiarity principle makes it difficult, given substantial heterogeneity, to push aside domestic governments and fashion a genuine European health policy, the European level may be optimal in several situations. First, the EU may be a precondition for achieving the needed collective action in the prevention of an epidemic or a pandemic, by extending data-sharing, organising solidarity in the supply of medical protection equipment and medicines and organising the limitation of cross-border health risks (Costa-i-Font, 2020). Second, the EU may generate economies of scale in the production of vaccines, medical equipment, and in terms of prevention (see 2.3). Third, health shocks may produce economic and social asymmetries between EU Member States, as the Covid crisis has shown.[3] Such shocks jeopardize "economic, social and territorial cohesion, and solidarity among Member States" (art. 3, TEU) and should require the use of "appropriate means commensurate with the competences which are conferred upon the EU in the Treaties" (art. 3, TEU).

2.2 A European health policy: increasing human capital and ensuring flexible deployment

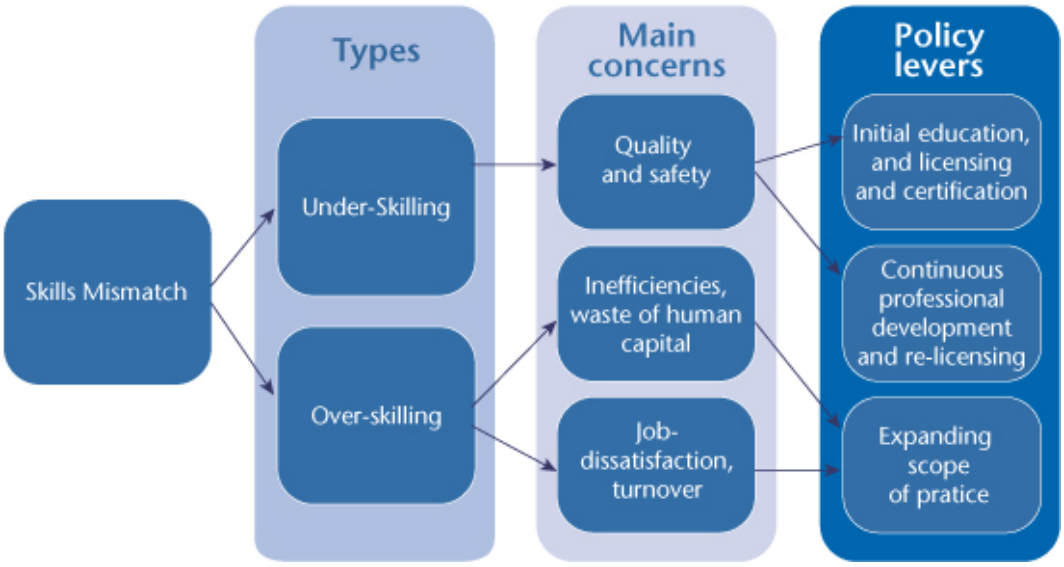
The objective of improving overall access to health in the entire EU requires an investment in human capital, to match health demand and therapeutic progress. OECD (2016) reports three issues that need to be addressed regarding the supply of health care workers: international mobility, intra-country mobility and skills' mismatch. First, temporary international mobility

[2] In an annex to the final act of the intergovernmental conference which adopted the Treaty of Lisbon in December 2007, "(t)he Conference declares that the measures to be adopted pursuant to Article 168(4)(c) (of the TFEU) must meet common safety concerns and aim to set high standards of quality and safety where national standards affecting the internal market would otherwise prevent a high level of human health protection being achieved." (emphasis added)

[3] OECD report (2019) makes a strong case for addressing health-related inequalities as a key component of a policy strategy to reduce social inequalities.

facilitates the diffusion of knowledge and best practices, but permanent international mobility may generate supply shortages in the home countries of the foreign-trained doctors and nurses. Second, many countries are plagued with inequality in health supply between urban and rural areas, despite financial incentives to limit discrepancies. Third, physicians and nurses report activities in which they feel either under- or over-skilled. If they are under-skilled, the quality of care and safety are at stake. If they are over-skilled, there are inefficiencies: organization and design of the workforce could improve and could help to reduce mounting job dissatisfaction.
As shown in figure 2.1, the development of training programmes, regular re-licensing and continuous professional development programmes, including more on-the-job practical training are policy options to reduce skills mismatch. Decided and funded at the EU level, they could also help rebalance the urban-rural inequalities in health supply in countries where fiscal rooms for manoeuvre are limited and foster temporary European cross-country mobility.

Figure 2.1. Analytical framework to examine skills mismatch in the health sector



Source: OECD (2016)

The Covid-19 pandemic has shed light on the shortages in the intensive care units. Not only were there shortages in equipment (e.g. respirators) and beds, but also shortages in labour supply: caregivers, nurses, physician assistants and (specialised) physicians. Increasing the number of staff in these units is critical in the preventive management of the next epidemic. Solidarity from hospital (and sometimes non-hospital) staffs of other medical units – which to some extent also occurred across national borders – and re-organisation during the crisis have certainly helped to handle the pandemic. Yet, this solidarity cannot hide that the intensive care units require many technical and specific skills to minimise risk to the patients. Investment in these skills remains an important issue. These skills can be regularly practiced on-the-job by physicians of other units when they participate in doctor pools of medical night care in intensive care units. In France, cardiologists, pulmonologists, and nephrologists continue to be part of these pools in hospitals. But mutualisation of skills is certainly limited to a small number of medical specialties and cannot be extended to all fields. To take an example, a surgeon has inappropriate skills to work in an intensive care unit while an intensivist is not qualified to work in surgery. It means that human capital investment remains medical-sector-specific.

Periodic health crises may require different specialties, jointly or separated. But we cannot simply increase the number of all medical staff irrespective of the incurred costs. There is a trade-off between the optimal number of staff in medical units during “normal” and “pandemic” times. One does not want either too many or too few staff in a given medical field, for they would raise inefficiency and optimal allocation issues in the former case and safety risk in the latter.

The European level comes naturally as a problem solver for this trade-off. The EU is a wide area with different local health systems and likely exposed to asymmetric health shocks. The local health systems offer very different capacities to meet the needs of their population. For instance, access to a specialist is uneven across EU countries: A recent OECD (2019) study reported that 65% of the Germans but only 17% of the Romanians have visited a specialist in the previous 12 months.

A human capital stimulus at the EU level would help to reduce disparities and it would foster convergence to the highest health standards. It would also ease the prevention of health shocks by preparing a wider number of medical staff across EU countries to the emergence of an epidemic. Stated differently, the EU may provide for extra-training so that there is – in normal times – an increased amount of skills for which there are no market incentives to build up. Meanwhile, the EU would require from those benefiting from training that they are to some degree mobile across EU Member States. The EU would monitor an allocation mechanism so that the improved skills can be redeployed where they are needed and when an asymmetric health shock hits.

The EU would build an EU agency (see 2.4) to deliver on-the-job training programmes for the whole EU. It may also incentivize European mobility, to nurses, assistant physicians and physicians all over the EU via subsidies. The programme would allocate them temporarily in units which are technologically advanced, hence favouring knowledge diffusion, or in units with supply shortages.

2.3 A European health policy: ensuring the supply of strategic health products

The European Commission Vice-president, Vera Jourova, said in a statement on April 2020 that the coronavirus crisis "revealed our morbid dependence on China and India as regards pharmaceuticals". The Covid-19 crisis served as a revelation but the supply disruptions on some drugs are a regular occurrence for at least twenty years in Europe. A list of drugs and health commodities of higher strategic interest could thus be drawn up, leading to negotiations with industry to guarantee their supply. Establishing this strategic list will be the first mission of the European agency that we propose. The list should be subject to regular review.

Supply security plans, as they currently exist in most European countries, are primarily based on a system of alert and information on supply tightening. They may also include storage obligation and penalty schemes for industry in the event of failure of supply.

Establishing a scheme at the European level should reinforce the bargaining power of the member countries. Bargaining at the EU level has the advantage to avoid an excessive dependence on national pharmaceutical industry. The conditions the European Agency may impose on the industry in terms of storage or production location are possible at reasonable costs at the European level only. Finally, stock management at European level has the advantage of pooling risk to the extent that demand shocks are not symmetrical.

The international fragmentation of the supply chain is the main obstacle to the effectiveness of supply security plans.[4] Production units may, it is true, be located outside Europe, undermining the effectiveness of the security plans negotiated with industry. Still, the

[4] See e.g. Bamber et al. (2020) on global value chains in the pharmaceutical industry.

geographical coverage is obviously larger than any one member state and the EU also has a much greater collective clout vis-à-vis third countries to help ensure supply during disruptions.
Real effectiveness of supply security plans requires a partial relocation of production sites. Two mechanisms could be implemented by the European agency in its negotiations with the pharmaceutical industry:

- Conditioning the funding of strategic health commodities on the production on the European territory of part of the volume sold in the European market. These conditions should include the main components of these commodities.
- Public-private partnerships for the research and development of new innovative or strategic pharmaceutical products with guarantees in terms of domestic access to the innovation. The Biomedical Advanced Research and Development Authority (BARDA) agency in the USA has used this type of agreement with industrial groups to help pharmaceutical firms develop a vaccine against Covid-19 and facilitate domestic access to it.

The cooperation scheme for the purchase of H1N1 vaccines showed that a European cooperation scheme can only be effective if it is compulsory (OECD, 2018). The European Agency should have full competencies to negotiate prices and supply conditions for the strategical health commodities.

Negotiations on the adaptation of the European and international competition law will be necessary if local production clauses are part of the agency's prerogatives. The European delegation of the whole Health Technology Assessment (HTA) function, at least for products of European strategic interest, is also essential.

The costs of European cooperation to ensure the supply of strategic health products are twofold:

1. The operational costs of the European agency (purchasing and HTA functions) which need to be compared with possible savings in national agencies (see below for an evaluation of the European agency budget).
2. The health commodity price increases induced by the conditions imposed on the pharmaceutical industry, relocation conditions in particular. It should be compared with the possible gains derived from the centralized price bargaining scheme. The percentages of GDP spent on medicines in Europe range from about 1.5% to 2%. This makes it possible to estimate the upper-limit budgetary impact of a price increase even if is impossible to assess the increase without knowing the scope of health commodities that will be considered of strategic interest. A price increase of 10% on average on all medicines would cost Europe around €30bn per year given a European medicines budget of 2% of GDP.

2.4 What budget for a federal agency?

What should the budget of a European federal agency for disease prevention, biomedical research and training programmes be? This section attempts to arrive at an estimate using the United States system as a benchmark. It also compares the European federal agency with the two smaller health agencies that already exist at the EU level.

Most of the many agencies that deal with disease prevention and control are under the control of the US Department of Health and Human Services, the US "Ministry of Health". The budget of these agencies is quite limited in size. Most notably, BARDA, that made the headlines because of its agreement with Sanofi, has a budget of around $1bn that should serve among other things to support the development of vaccines and antiviral drugs. The Center for Disease Control and Prevention (CDC), also a branch of the Department of Health, has a budget of around $12bn, that go into programs as varied as protecting citizens from Natural disasters and bioterrorism, to funding buildings and facilities, and public health related prevention programs. "Protecting American from Infectious Disease" had $3bn earmarked for the fiscal year 2019. The total funding of BARDA and CDC amounts to around 0.06% of US GDP.

Europe currently has two agencies that perform similar tasks to Barda and CDC[5]. For 2020, the total budget of the European Medicines Agency (EMA) amounts to €358.1 million. Around 86% of the Agency's budget derives from fees and charges, and 14% from the European Union budget. Most of the work of the EMA is in centralizing the requests for marketing medicines (most notably for diseases such as HIV and other viral disease). Most innovative medicines go through this evaluation and authorisation process, while generic medicines are assessed and authorised at the national level.

The European Centre for Disease Prevention and Control (ECDC) is an EU agency aimed at strengthening Europe's defences against infectious diseases. The core functions cover a wide spectrum of activities: surveillance, epidemic intelligence, response, scientific advice, microbiology, preparedness, public health training. Vaccine preventable programmes fall within its scope. Its budget is around 60 million euros, of which slightly more than 21 are operating expenditure. The total budget of the two agencies for Europe is therefore around €400 million, or 0.003% of EU27 GDP.

In the event of a (partial) “federalisation” of public health in the EU, to have the same percentage as the US, the budget of the two agencies would have to be increased to $6.8bn per year. However, the US budget itself has been criticised as completely insufficient (after almost two decades of cuts) An extensive report of the National Academies of Sciences Engineering and Medicine (NASEM, 2017) estimates that the level of funding was appropriate at the beginning of the years 2000. Since then, the overall expenditure for disease preparedness and prevention (as a percentage of GDP) has been cut by roughly two thirds. To restore the levels of the early 2000s, therefore, and assuming that the same ratios apply to all agencies, the total funding of BARDA and CDC should be multiplied by three and brought to around 0.18% of US GDP. If the same were applied to the EU agencies, we would come to an estimate of roughly €20bn per year, i.e., €140bn to be compared with the amount of less than €10bn that the Commission proposes for its EU4Health program on a 7-year horizon. This, of course is to be interpreted as a rough estimate. Much would depend on how many of the competencies nowadays attributed to national government would be transferred to the “federal” level. There would also be offsetting savings at national level.

3 A New European Green Transport Infrastructure

3.1 Background

In its early stages from the 1950s to the 1980s, transport policy was mainly within the competence of the EU member states, with strong publicly owned monopolies following national priorities. From the mid-1980s onward, the European Union developed an EU transport policy, based on the idea of competition, in order to create a single European market in the different infrastructures, including transport (Finger et al., 2015). Initially the focus was on extending the Trans-European Transport Network (TEN-T) as a planned network of roads, railways, airports and water infrastructure in the EU (Figure 3.1, left panel shows the core TEN-T network which was planned to be finalised by 2030 at a cost of around half a trillion Euro, according to DG MOVE, 2017). Subsequently the emphasis shifted to opening up transport markets, including by establishing a common framework for charging for transport services.

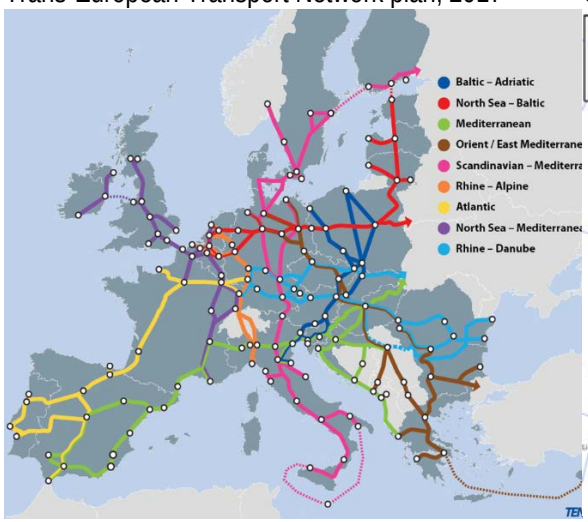
More recently the greening of transport became a declared goal. Given that the transport sector accounts for roughly a quarter of total greenhouse gas emissions produced by human

[5] It is also noteworthy that EU Member States have national agencies, but so do US States.

activity in the EU, the European Commission (2011) published the 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system'. This White Paper suggested to massively reduce Europe's dependence on oil and to cut carbon emissions in transport by 60% by 2050. The key measures to fulfil this goal were planned to be: i) No more conventionally-fuelled cars in cities; ii) 40% use of sustainable low carbon fuels in aviation and at least 40% cut in shipping emissions; iii) A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport.

Figure 3.1 TEN-T Core Network Corridors and high-speed railway lines in Europe

Trans-European Transport Network plan, 2017



Source: DG MOVE, TENtec Information System.

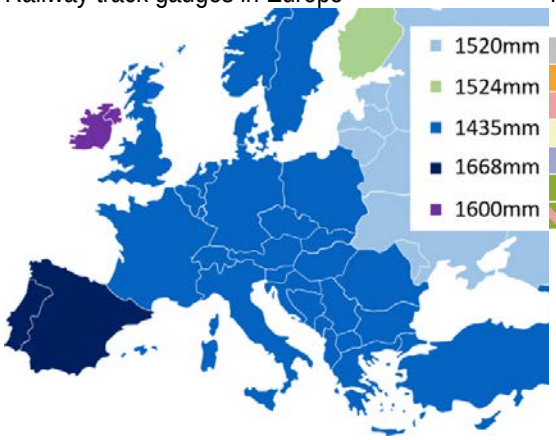
Operational high-speed railway lines, 2019

Source: Wikipedia.

An emissions-reducing shift towards cross-border high-speed railway lines, via reduced road and air traffic has yet to be seriously embarked upon. High-speed rail remains mainly a national project. Moreover, there are only very few lines in Europe that allow for a speed of more than 300 km/h, a speed that is achieved in China on all major high-speed railway lines of its core network. In Europe, these are for instance the lines Paris-Strasbourg and Madrid-Barcelona (Figure 3.1, right panel). The vast majority of major railway lines allows only a speed of (far) below 200 km/h. Cross-border travel is also hampered by a number of technical differences. This includes different railway track gauges, various types of electrification, incompatible signalling systems and railway platform heights (Figure 3.2). Interoperability is also hindered by the fragmentation of national railway companies with their different standards of operation.

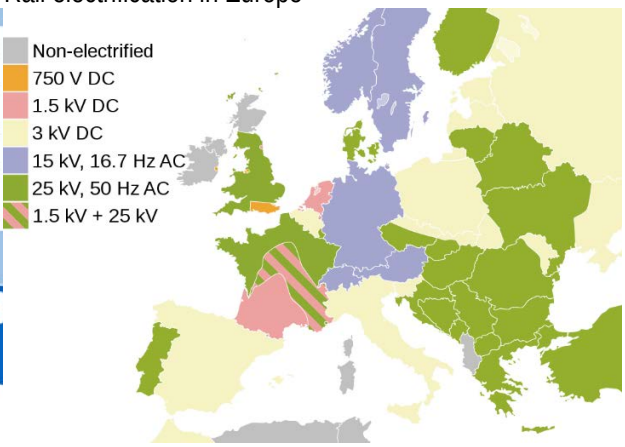
Figure 3.2 Different types of railway track gauges and electrification systems in Europe

Railway track gauges in Europe



Note: Millimeters mm
Source: forschungsinformationssystem.de.

Rail electrification in Europe



Note: Alternating current AC, direct current DC
Source: Wikipedia.

3.2 Transport infrastructure proposals

3.2.1. The Ultra-Rapid-Train

This is a proposal for a European green high-speed train network to be established as part of a recovery programme from the COVID–19 crisis over the period of the 2020s.
The URT network should be a new double-track high-speed railway system that is complementary to the existing networks. However, where suitable, also existing lines could be adapted. An average speed in the range of 250–350 km/h should be achieved. This would allow passengers to halve the current rail travel times, for instance, from Paris to Berlin to about four hours, making air travel for a large part of the intra-European passenger transport obsolete. Cutting by around half the EU's domestic air passenger operations has the potential to reduce global commercial aviation CO2 emissions by about 4–5 percentage points.[6] In addition, rail cargo capacities would be increased, freight transport speeded up and so also road-vehicle emissions reduced.

[6] Based on the data provided by the ICCT: https://theicct.org/publications/co2-emissions-commercial-aviation-2018. Of course this has (negative) implications for employment in the airline sector, while employment in the rail sector expands. This is a classic case of the need for accompanying (Just Transition) policies as part of the Green Deal.

Figure 3.3 The Ultra-Rapid-Train network map

Source: GEOATLAS.com; own routes.

A fully fledged URT network might consist of four major railway lines, connecting all the capital cities of the EU and the Western Balkans' (potential) EU candidate countries. Equally it connects many of Europe's key economic powerhouses, but also less developed regions, such as the Mezzogiorno. The overlap with the existing Trans-European Transport Network (TEN-T) is substantial, but due to the big technical differences in the national railway systems (e.g. different gauges, railway electrification, security systems), it should be stressed that the URT network should be an additional infrastructure, with its own technical standards.[7]

The lines are (see map in Figure 3.3):

- Dublin-Paris via a ferry-based sea link between Cork and Brest, taking on an additional significance in the context of Brexit (green)
- Lisbon-Helsinki including a loop around the Baltic Sea meeting in the Ruhr area (red)
- Brussels-Valletta, (blue)
- Berlin-Nicosia, with a ferry-based sea link between Piraeus and Paphos and a loop between Vienna and Sofia (brown)

Applying the methodology developed in Holzner et al. (2018), the country-specific construction costs at 2019 prices to build the entire URT network of roughly 18,250 kilometres would amount to about €1,100bn (i.e. about €60 million per kilometre). Based on average costs per km, the order of magnitude for the red line (8,000 km) would be €558bn, the brown one (5,700 km) €249bn, the blue line (3,460 km) €207bn and the green line (1,080 km) €80bn. The cumulative costs would amount to around 7.5% of the participating countries' annual GDP (Table 3.1) and would be stretched over an investment horizon of a decade or two. The table also indicates orders of magnitude for the ratio to national GDP: this shows the substantial boost to investment that would be provided in notably, some of the less developed member states. (At the same time the benefit of the network to a country cannot simply be equated with the amount of track

[7] As the European Court of Auditors (ECA, 2018) has stressed, the TEN-T plans do not constitute a European high-speed rail network, but only an ineffective patchwork of national high-speed lines.

laid down on its territory.) The prices likely reflect an upper bound of the potential costs as they represent the expenses to build a new two-track railway line with tunnels.[8]

Table 3.1 Estimated length and cost of the URT network by country

	km total	2019 costs EUR mn	2019 costs % GDP
Austria	531	37,012	9.3
Belgium	419	26,880	5.7
Bulgaria	853	35,779	59.0
Croatia	164	6,778	12.6
Cyprus	190	9,845	44.9
Czechia	377	19,302	8.8
Denmark	213	18,263	5.9
Estonia	315	17,293	61.7
Finland	563	54,871	22.9
France	2,060	171,544	7.1
Germany	2,299	185,774	5.4
Greece	639	28,774	15.3
Hungary	279	11,359	7.9
Ireland	404	23,176	6.7
Italy	2,254	115,400	6.5
Latvia	252	11,192	36.7
Lithuania	435	22,808	47.1
Luxembourg	97	7,180	11.3
Malta	66	4,275	32.4
Netherlands	257	17,280	2.1
Poland	792	42,991	8.1
Portugal	270	9,660	4.5
Romania	619	20,237	9.1
Slovakia	99	4,824	5.1
Slovenia	259	14,219	29.6
Spain	1,196	56,806	4.6
Sweden	783	70,999	15.0
EU	**16,685**	**1,044,519**	**7.5**
Albania	304	7,876	57.7
Bosnia and Herzegovina	340	10,067	56.2
Kosovo	166	5,069	71.6
Montenegro	162	6,595	134.4
North Macedonia	144	5,063	44.6
Serbia	448	14,923	32.5
WB	**1,564**	**49,592**	**49.2**
Total	**18,249**	**1,094,111**	**7.8**

Note: In the case of the tunnels, bridges and artificial islands to be built between Finland and Sweden, Finland and Estonia as well as Italy and Malta, construction kilometres were split between the countries, explaining e.g. Malta's relatively large amount of kilometres compared to the island's size.

Source: own calculations.

[8] Prices are based on official Austrian unit costs reflecting the Alpine terrain, adjusted for each country by Eurostat's price level indices for civil engineering works. By comparison, ECA (2018) found average national high-speed rail lines' costs of €25 million per kilometre, not taking into account the more expensive tunnelling projects, however.

Similarly to the 'European Silk Road' proposal in Holzner (2019) – see also below – the operations of the URT could be concentrated in a Ultra-Rapid-Train Trust (URTT) as a public limited company. This would allow for the extra-budgetary financing of investment in infrastructure and for the network's operation. While the URTT (owned by the participating EU and Western Balkan countries or alternatively the EU) could rely on a public guarantee when it comes to issuing long-term bonds, it would formally be part of the private sector (following the example of the Austrian ASFINAG as described in Nauschnigg, 2015), especially as it would have sufficient income of its own from private customers (i.e. various types of tickets and tolls). This means that the full cost of the URT network need not be borne by the recovery fund, which could, for instance, be limited to kick-off investments of e.g. half of the costs and/or providing the initial guarantees.

The construction of the 'Ultra-Rapid-Train' – URT – system achieves several goals simultaneously: i) to act as an anti-cyclical construction project to counter the economic fall-out from the current crisis and an expected secular stagnation (see e.g. discussion of a permanent stimulus by Krugman, 2020); ii) to provide EU citizens with a concrete benefit that satisfies their need for fast inner-European transport while avoiding as far as possible air transport; iii) to represent a pan-European activity to foster European integration and cohesion; iv) to constitute a lighthouse project in support of the European Green Deal's aim of 'accelerating the shift to sustainable and smart mobility', complementing efforts to decarbonise electricity generation; v) to bridge the technological gap vis-à-vis China in the development of high-speed train technology as well as providing a response but also a link to the Chinese Belt and Road Initiative; vi) to create another European champion in the transport industry in line with the 2019 Franco-German Manifesto for a European industrial policy fit for the 21st Century.

3.2.2. The European Silk Road

An alternative proposal for a large pan-European transport infrastructure initiative would be the before-mentioned European Silk Road (ESR) as suggested by Holzner et al. (2018) and Holzner (2019). The main difference to the URT proposal is that the ESR extends to the EU's Eastern neighbourhood countries and Russia and includes in addition to high-speed rail other transport modes. On the other hand, it would not tie together all the member states of the EU, but focus on a major northern and southern route.

It is important to note that much of greater Europe's infrastructure is in a bad state, even in some wealthy parts of Europe, such as Germany. Europe's periphery is underdeveloped and has difficulties to catch up, in part because of substantial infrastructure deficiencies. Current European infrastructure initiatives are insufficient and piecemeal. In this context, a new transport infrastructure – the European Silk Road (a combination of an e-mobility motorway, high-speed rail, ports and logistics centres) – could connect the industrial areas of the west with the populous, but less developed, regions in the east of the continent.

Figure 3.4 The European Silk Road map

Source: GEOATLAS.com; Holzner et al. (2018).

In a 'Big Push' the building of the ESR is meant to generate more growth and employment in the short term as well as in the medium and long term. After its completion, the European Silk Road would extend overland around 11,000 kilometres on a northern route from Lisbon to Uralsk on the Russian-Kazakh border and on a southern route from Milan to Volgograd and Baku (Figure 3.4). Central priority parts are the route from Lyon to Moscow in the north and from Milan to Constanţa in the south. The southern route would link Central Europe with the Black Sea area and the Caspian Sea littoral states.

A state-of-the-art motorway and high-speed railway line with a string of logistics centres, seaports, river ports and airports could set new European standards, among others in e-mobility. The full extension would constitute around €1tn or approximately 8% of the gross domestic product of the countries situated along its two routes (including Russia). The costs relative to the EU's economic output amount to about 7%.

According to a conservative estimate, the European Silk Road could lead to an economic growth of 3.5% on average and an increase in employment of around 2 million along its routes in the course of an investment period of 10 years. Under favourable circumstances and at continued low interest rates, an employment creation of over 7 million can be expected in greater Europe. The improved infrastructure of the key route could yield significant time savings of over 8% in road transport on the northern route into the central region of Russia alone. On average this would save approximately 2.5 hours, for instance from Vienna. Thus, the countries along the northern route would be able to increase their exports to Russia by more than 11%. This would imply additional exports of over €12.5bn. Again, these are very conservative estimates and likely gains in time savings could be substantially higher.

In order to conduct and finance the project, similar to the URTT, we propose establishing a European Silk Road Trust (ESRT) as a public limited company. This would allow for the extra-budgetary financing of investment in infrastructure (and for the project's operation). While the ESRT (owned by the euro area countries, other EU countries and third countries that wish to join in the construction of the European Silk Road) could rely on a public guarantee when it comes to issuing long-term bonds (at currently zero or even negative interest rates), it would formally be part of the private sector, especially as it would have sufficient income of its own from private customers (tolls).

Finally, a smaller version of the ESR could include the construction of the northern and the southern high-speed railway routes only, without the motorway and the ports and logistic centres. This would sum up to about €580bn and represent a minimum variant for a greater European green transport infrastructure.

4 Electrifying the European Green Deal

The EU has committed itself as part of its Green New Deal Strategy to carbon neutrality by 2050. It is vital that recovery measures, while promoting growth and employment, also contribute to those goals. The capital stock that we build through public and private investment will be with us for a long time (in some cases up to 2050), so decisions made now will affect our ability to realise longer-term climate-related goals. It is crucial to avoid a lock-in of inappropriate technology and capital. Given that climate change is a common threat – that is there are massive (positive) externalities between countries in addressing climate change effectively – there is a compelling logic for the involvement of the European level to at least partially internalise these externalities, not least in the matter of ensuring a Just Transition (Watt 2019).

Achieving climate goals will require both public- and private sector investment, and also regulatory activity at both EU and national (indeed down to local) level. Regulatory issues are of crucial importance. Only at the European level, for example, can an effective Emissions Trading Scheme (ETS) with broad coverage (and/or effective CO2 taxation) be implemented. Only the EU could introduce a border adjustment levy and ensure its implementation within the WTO context. This is a precondition for effective carbon-pricing (as it short-circuits the exit threat by carbon-intensive industries). Both an expanded ETS/carbon tax and a border levy are candidates for sources of additional EU own resources that could pay back the debts incurred as part of the recovery programme.[9] Here, however, we leave the regulatory issues to one side and focus on EU-level public investment and EU-provided support for national policies as part of a ten-year and beyond recovery programme.

A key question is which investment decisions should be taken by Member States and which ones by the EU. The main justifications for EU involvement in determining investment priorities and ensuring their implementation include economies of scale and the existence of network effects. In these cases, the supranational scale is crucial in avoiding duplication and inefficiently small solutions being pursued at national level by uncoordinated planning. Other justifications (such as cohesion motives) relate primarily to the provision of finance for the needed measures, which could, though, be decided upon and implemented in a decentralised manner. Policy areas in which national/local heterogeneity (e.g. climatic conditions, existing regulations) is high, on the other hand, require careful justification before activity at union level is deemed advantageous.

Perhaps the most obvious area in which externalities favour a strong European role is in basic research. The Commission has already recognised that, in health care, financing research on prevention and treatment would be more efficiently carried on at the EU level, avoiding duplication. But the same is true of basic research in other areas. The Commission has proposed an expanded budget of just under €100bn for the Horizon Europe research programme for the 2021-27 MFF (less than €14bn a year). The importance of fundamental research in expanding the knowledge base that is the basis for higher living standards, but also

[9] The above considerations also apply broadly to digitalisation, whose goals include decarbonisation (e.g. by reducing the need for physical transportation) but also productivity and the resilience of the EU vis-à-vis global competitors such as China and the US. We do not address the digitalisation agenda explicitly in this proposal.

for public goods such as lower carbon emissions, would justify an even greater resource deployment as part of the recovery programme.

In other policy areas as well, the potential European value-added is self-evident. By their very nature transport systems are “network industries”, with strong cross-border implications and high value in ensuring interoperability and solutions that are efficient from a European, not just national point of view: this vital element in reducing emissions was discussed in section 3. The ecological transition will need an electric vehicle infrastructure. A combination of electrifying road transport (which is not covered by the ETS) and decarbonising electricity generation is key to reducing emissions. The lack of a recharging network is a major factor holding back electrical vehicles. National infrastructure strategies are likely to lead to suboptimal outcomes.

Similarly, electricity grid expansion and upgrading (smart grids) is a European priority. The power grid is a key pillar of the carbon-neutral economy, as energy sectors become increasingly integrated. Reliable and inexpensive access to carbon-neutral electricity is vital. The risk is that some parts of Europe will be left out. The goal is to transmit electrical power with minimal energetic losses from places where it can be generated with zero emissions (e.g. coastal areas, southern Europe, North Africa) to places where industrial and household demand is high. This requires a massive investment in transmission and transformation infrastructure.

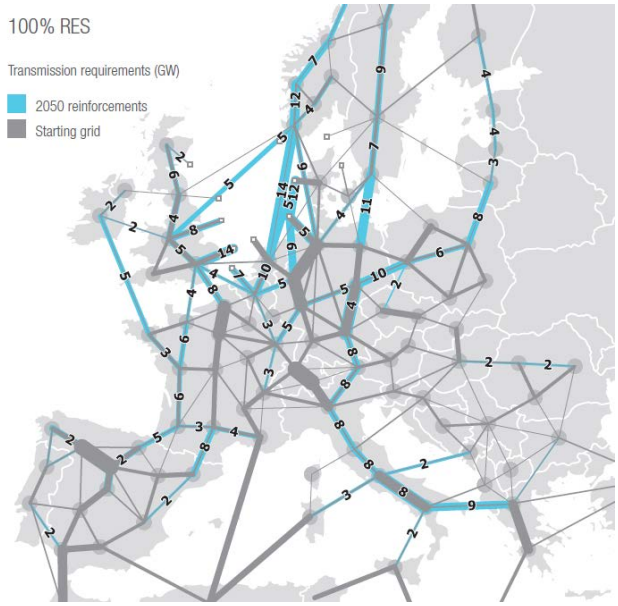
4.1 Proposal for the frontloading of a 100% RES e-highway

A common European energy policy has a long-standing tradition, starting with the establishment of the European Coal and Steel Community in 1951 or the European Atomic Energy Community in 1957. More recently, the European Commission (2015) came up with an Energy Union package that defined ambitious goals for the EU’s energy policy, including the interconnected-ness of energy networks; security of energy supply; energy efficiency and saving; the development of new and renewable forms of energy; the promotion of research, innovation and competitiveness. However, the Energy Union has only very limited competences, as each Member State maintains its right to ‘determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply’ (TFEU Article 194(2)).

In the European Commission’s (2013) Green Paper and related documents, plans for a new European energy system were laid out for the period 2030-2050. An almost complete reduction of the energy sector’s greenhouse gas emissions by the mid of the century became a declared aim. However, besides massive national efforts to shift to renewable energy sources (RES), decarbonisation will need a major upgrade of the energy network, due to regional RES imbalances, supply volatility and high needs for electricity exchanges. Regular Ten-Year Network Development Plans (TYNDP) prepared by the European Network of Transmission System Operators for Electricity (ENTSO-E) address the development of the pan-European electricity transmission network from now until 2030 and beyond.

The TYNDP 2018 (ENTSO-E, 2018) estimates the costs of its proposed investments in transmission projects at €114bn for the period up to 2030. ENTSO-E (2015) addressed a longer-term horizon to 2050. In their e-Highway2050 vision they discuss five scenarios for reaching this goal and what it means for the electricity transmission grid. Their most radical scenario is a 100% RES scenario. Inter alia this scenario assumes no nuclear and fossil energy generation (about half wind, a quarter solar, and the remaining hydro and biomass), high electrification, high energy efficiency and widespread storage technologies and demand side management (Figure 4.1).

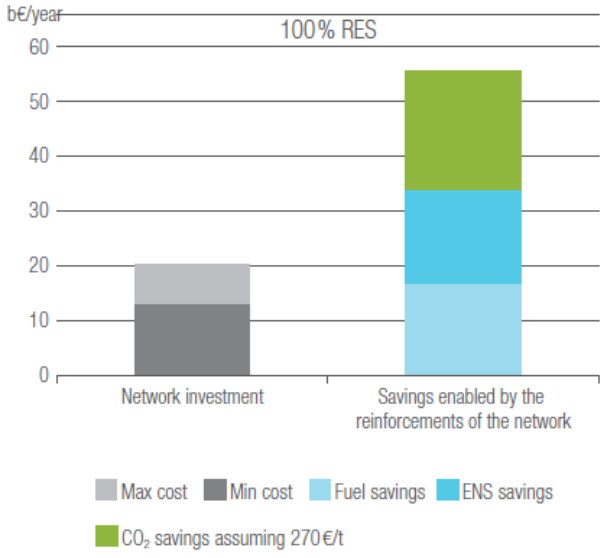
Figure 4.1 Transmission requirements identified in a scenario of 100% RES by 2050, in GW



Source: ENTSO-E (2015).

Reinforcements of the existing grid are needed to achieve this goal particularly by connecting the north of the continent with the south – i.e. linking the large potentials of wind energy with solar energy generation. This includes also important investment in reinforced electricity connections in the Baltics and Poland, southern Italy and Greece, which could have the potential to foster convergence. Related cost estimates range between €250bn for lower-priced overhead lines, and some €390bn for underground cables, over the period 2030–2050. This corresponds roughly to maximum annual costs of €20bn, but these are dwarfed by estimated savings of CO2, fuel and energy not supplied (ENS) in the order of annually €55bn (Figure 4.2).

Figure 4.2 Grid annuities of investment and benefits for the 100% RES scenario, in bn EUR/year



Source: ENTSO-E (2015).

Importantly the proposed architectures could be integrated in the present grid, without introducing a separated 'layer' of transmission grid. We suggest frontloading investment in the energy grid and related infrastructure in order to make the energy transition to which Europe has committed itself more credible and bring it forward in time, while promoting recovery from the COVID–19 crisis and improving competitiveness. Taking into consideration certain construction cost inflation and adding the estimates for the immediate expansion costs up to 2030 we arrive at a rough estimate of the infrastructure investment needs for a pan-European 100% RES e-highway of about €520bn over a twenty to thirty-year horizon.

As renewable energy sources are variable, storage systems are vital for decarbonizing energy use. Green hydrogen (power-to-gas) plants and batteries are two different measures that have the same basic effect of storing renewably generated power until it is needed. Their promotion is to be seen as complementary to expanding the transmission grid. Hydrogen can be converted back into electricity or used directly, as for example in the direct-reduction of iron (Agora Energiewende/Agora Verkehrswende, 2020). The EU can support the development and roll-out of new technologies in these areas by funding research, subsidising investment in production plants and generation capacity, particularly with a view to favouring production in regions suffering problems related, for example, to the rapid winding down of the coal industry (as part of a just transition strategy) and/or in areas (such as the Mediterranean coastal areas or south eastern Europe) which have favourable climatic conditions but where governments lack the ability to fund national programmes. This is one of the domains in which ecological transition and cohesion policies go hand in hand. At the same time the risk of multiple, mutually incompatible national strategies can be avoided.

4.2 Proposal for a refinancing fund for climate-related measures by member states

Subsidies and grants to the private sector to correct market failures – as the incomplete nature of the ETS means that the full price of carbon is not internalised in production and consumption decisions – should be part of the package for ecological transition. A time-limited subsidy programme could be made available for manufacturers (e.g. in steel, concrete industries, which are carbon intensive) to invest in production technologies that, at current energy prices, even with the ETS, are not yet commercially viable (see for Germany Agora Energiewende/Agora Verkehrswende, 2020). A programme of grants could be initiated to provide venture capital for innovative start-ups whose business model is based on reducing energy use. Goods transport by road is clearly an issue that is already heavily regulated at European level. Alongside regulatory efforts (which, though, will raise costs and risk being postponed in the context of economic crisis), time-limited subsidies could be provided for replacing old haulage vehicles with modern vehicles (that meet the Euro VI norm). In the context of restructuring of airlines – many of which have been partially nationalised as part of rescue packages – similar aids could be provided to accelerate the modernisation of the stock of airplanes.

What we propose here is to establish a fund that follows the basic principles of the already-agreed SURE program, which provides time-limited subsidies for national short-time working schemes. (It might analogously be called SURCE - SUpport in Reducing Carbon Emissions). The same principles apply: member states can recoup from EU funds part of the cost of national instruments that reduce carbon emissions. In the case of SURE the support is only available as loans; the long-term financing of climate projects with their strong cross-border implications should, in our view, be provided via grants, rather than loans, but this is not an essential feature.

More generally, Just Transition is rightly recognized by the EU Commission as an important part of the European Green Deal. The €100bn (plus the €32.5bn announced in European Commission, 2020a) Just Transition fund will, as part of the recovery fund, be bolstered by

measures that also make sense in the context of economic recovery. Re-training programmes for those displaced by the Corona-induced slump, and particularly those workers from industries dependent on fossil fuels, to enable them to acquire the necessary skills to flourish in and contribute to a low-carbon economy, would be an obvious extension of the SURE programme. Going forward, we should strive to make "environmentally friendly" active labour market policies permanent. If the conditions are set appropriately, these programme will disproportionately benefit areas most severely affected by the needed structural transformation.

Because the funds needed depend – rather than on technical considerations, as with transport networks, for instance – on the number of different policies that receive support and the generosity of the support as a percentage of the total costs, the size of the financial “envelope” for this scheme depends more on political considerations. We consider a volume of around €30bn a year and thus roughly €300bn over a ten-year horizon to be in keeping with the overall proposal.

5 Concluding remarks

The Recovery Fund recently proposed by the EU Commission marks a sea-change in European integration. Yet it will not be enough to meet the challenges Europe faces. There has been much public debate about financing, but little about the sort of concrete projects that the EU should be putting public money into.

We propose a 10-year, €2tn investment programme focusing on public health, transport infrastructure and energy/decarbonisation. Alongside a national pillar, the bulk of the money would be devoted to finance genuinely European projects, where there is an EU value added. We call for a strengthened EU public health agency that invests in health-staff skills and then facilitates their flexible deployment in emergencies, and is tasked with ensuring supplies of vital medicines (Health4EU). We present costed proposals for two ambitious transport initiatives: a dedicated European high-speed rail network, the Ultra-Rapid-Train, with four-routes cutting travel times between EU capitals and regions, and, alternatively, an integrated European Silk Road initiative that combines transport modes on the Chinese model. In the area of energy/decarbonisation we seek to “electrify” the Green Deal. We call for funding to accelerate the realisation of a smart and integrated electricity grid for 100%-renewable energy transmission (e-highway), support for complementary battery and green-hydrogen projects, and a programme, modelled on the SURE initiative, to co-finance member-state decarbonisation and Just Transition policies.

The crisis induced by the pandemic, coming as it does on top of the financial and euro crises poses a huge challenge. The response needs to take account of the longer-run structural challenges, and above all that of climate change. The European Union should rise to these challenges in the form of an ambitious medium-run recovery programme, appropriately financed. An outline of such a programme is set out here by way of illustration, but many permutations and options are available to policymakers. Clearly Europe’s investment needs extend beyond the ten-year horizon. Some of the proposals here cannot be fully funded with the suggested €2tn over ten years and will in any case take longer to realise. In the longer term the EU needs to establish a true fiscal capacity of which the RF is only an initial, but a vital, kick-off programme.

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