



Proposal for Zero-COVID Instrument

This Generation (EU) NOW

Yaneer Bar-Yam, Marek Chochowski, Maciej Grodzicki,
Mateusz Leźnicki, Krzysztof Mroczkowski

The presented expert assessment refers to a Zero-COVID Instrument that would help restart economic and social activity much faster than through vaccine-based herd immunity. The included proposal is based on two-month European Temporary Basic Income (ETBI). The expert assessment estimates the costs, explains how the solution should be financed and implemented in line with European regulations. It analyses the epidemiological bases for establishing the Instrument and describes the expected advantages of the suggested solution.

The proposed Instrument is based on four pillars.

First, a Zero-COVID strategy, which assumes that only extinguishing existing pandemic outbreaks and interrupting the transmission of SARS-CoV-2 can lead to a situation where European countries will be able to control the epidemic and return to normal social and economic life. For this, a hard lockdown of several weeks may be necessary, according to the decisions of individual member states.

Secondly, we point out that the introduction of such a lockdown, as one of several necessary measures, requires the safeguarding of citizens fundamental social rights and a form of renewal of the social contract. To this end, we propose the payment of a European Temporary Basic Income, which would cover a period correlated with the period of the hard lockdown.

Thirdly, we would indicate the sources of funding the Temporary European Basic Income, which would be financed by means of multi-annual or even perpetual bonds issued by the European Central Bank (ECB).

Fourthly and finally, we point to the legal framework and the Treaty mechanisms on which the proposed Instruments can and should be based, and which do not require any systemic changes at community or national level.

The welfare and public legal status of individuals belonging to the present generation rather than to subsequent generations will be decisive both for the future reconstruction of the EU economy and for the European political project in general; therefore, at the threshold of the next pandemic wave, we need measures that are adapted to the scale of the COVID-19 pandemic. The proposed instrument provides such solutions within the framework of This Generation (EU) NOW.

1. Rationale for action

The first wave of the COVID-19 pandemic caught Europe by surprise. In March 2020, most European countries mandated lockdowns. The high discipline among the citizens, their cooperation with the states and their willingness to sacrifice remind some of the spirit of wartime economic and social mobilisation. Already by late April, most of this was gone. While partially successful, the March lockdowns did not achieve near-zero infection rates similar to China, Taiwan, Vietnam, Singapore, Australia and New Zealand, as well as in the Atlantic provinces of Canada.

Throughout the summer, Europe, a Patient warned policymakers that complacency would result in the second wave of the crisis. We argued that political and economic solutions were needed to maintain social discipline that would be crucial for combatting the public health crisis. The EU leaders, in our view, were too optimistic during the summer COVID-19 decrease and too content with the 'Hamiltonian moment' and ground-breaking nature of the partial debt mutualisation proposal. In fact, what is a giant step for the EU may be too modest to ensure its long-term prospects. The gap between politically feasible and socially necessary actions is too wide, while the willingness of the public to make sacrifices continues to decrease.

The debacle of the lack of preparations for the next wave has led the public in many countries to lose trust in their leaders. Social unrest is a breeding ground for the success of political extremism. The European project itself may be losing its legitimacy. If the EU and member states cannot perform better on COVID-19 than South-East Asian countries, then what is the value of the project and the leadership to the citizens of Europe? What is the soft power loss of the European model's prestige throughout the world?

2. Instrument proposed

With uncertainty about vaccination rates, successive upcoming pandemic waves, as well as new mutations of the COVID-19 strain, economic and social uncertainty for European citizens persists. To combat the pandemic, we propose the Zero-COVID Instrument that would help kick-start full-scale economic and social activity much faster than through vaccine-based herd immunity.

Our proposal is a two-month Temporary Basic Income, which would allow countries to implement a several-week severe ‘circuit breaker’ blockade—as practiced in Australia and China and recommended by leading public health experts.¹ The proposed Instrument is designed to flexibly manage a pandemic situation for eight weeks. This short-term Instrument, according to the attached opinions and recommendations of leading virologists and epidemiologists, will bring infections down to near zero in as little as four to six weeks, allowing the economy to fully open with efficient testing and tracking systems.

The Proposed Instrument is complementary to the European Union Recovery Instrument including Next Generation UE,² which has been designed as a post-pandemic economic policy Instrument aimed at sustainable reconstruction and transformation of the EU economy after the COVID-19 crisis.³ This coordinated process of recovery and macroeconomic transformation of the EU economy will take years to complete, so now an Instrument of this generation is urgently necessary, as an Instrument that will bring the citizens of the EU closer to achieving the Zero-COVID goal, and contribute to a return to everyday life.

3. Cost of implementation

To achieve the Zero-COVID goals, we assume that the level of European Temporary Basic Income paid should be related to EU-wide costs of living, at a customary level of 75% of EU median equivalised net income. This shall be adjusted for national differences in prices levels, in order to obtain a national monthly value of European Temporary Basic Income, e.g. 575 EUR in Poland and 1088 EUR in Germany.⁴ The estimated two-months payment for each working-age EU citizen would account for ca. 566 billion EUR, or 4.1% of EU’s 2019 GDP. These could be paid

¹ R. Horton, *Offline: The case for No-COVID*, Lancet (London, England) 397.10272 (2021), p.359; M.G. Baker, N. Wilson, T. Blakely, *Elimination could be the optimal response strategy for COVID-19 and other emerging pandemic diseases*, bmj 371 (2020).

² Council Regulation (EU) 2020/2094 of 14 December 2020 establishing a European Union Recovery Instrument to support the recovery in the aftermath of the COVID-19 crisis (OJ L 433I, 22.12.2020, pp. 23–27), hereinafter: Next Generation UE or Council Regulation 2020/2094.

³ See motif (4), (8); see also Article 1 CR 2020/2094.

⁴ Own calculations based on Eurostat data on median incomes, PPS levels, and populations (2019).

directly into citizens' personal bank accounts (data provided by Member State central banks and the ECB) or by distribution of personal payment cards.

We propose that the European Temporary Basic Income shall be funded by the issuance of new long-term EU financial instruments with a clear social angle, the EU 'regeneration bonds' of a maturity of at least thirty years (possibly extended to fifty years, not excluding perpetual bonds).⁵ In this case, pandemic 'risk solidarity' creates the basis for shaping attractive conditions for issuing bonds, together with other safe-asset properties (backed by the EU institutions, a relatively high annual interest payment).⁶

The bonds would enable funding ETBI promptly, while their payback should be strongly linked to the newly established EU taxes, which are already being prepared by the European Commission (e.g. the border carbon tax, the digital platforms tax, the European wealth tax.⁷ Through such means, risk for investors is minimized, and expected yields should mirror the ones of ESM. The servicing of the 566 billion EUR debt, at an interest rate of 5% and yield of 0.5%, would cost 12.6 billion EUR per year (compared to the EU budget of 1.100 billion EUR), with a final repayment of 251 billion EUR in 2051.

Regardless of how the conditions for issuing regeneration bonds are finally shaped, it cannot be overlooked that this Instrument is complementary to the budget for the reconstruction and strengthening of European resilience, including Next Generation UE. The proposed instrument is not based on a guarantee and loan mechanism, because this is an instrument of social policy. This is crucial from the perspective of the values that the resources mobilized are intended to serve and the objectives to be achieved. Thus, this is an instrument that unites and not divides, as it does not contribute to deepening economic differences between the EU countries and does not make some Member States indebted to others. Indeed, the objectives and values of the

⁵ Perpetual bonds may be considered as well, which would offer the investors infinite interest payments, with no actual payback. This would require offering them higher yields, however at the benefit of lower individual payments.

⁶ The issuance itself could be organized e.g. by extending the capacities of the The Recovery and Resilience Facility (supporting already the NextGeneration EU) or by national governments (jointly guaranteed), cf. <https://voxeu.org/article/covid-perpetual-eurobonds> and A. Botta, E. Caverzasi, A. Russo, Fighting the COVID-19 crisis: Debt monetisation and EU recovery bonds, *Intereconomics* 55(4) (2020), pp. 239–244.

⁷ For instance, in the proposal of the economists Landais, Saez and Zucman, a European wealth tax should cover net worth of the top 1% richest individuals in the whole EU (at progressive marginal tax rates of 1–3%). Their estimates demonstrate that it shall levy 1.05% of EU GDP each year, allowing it to pay back the extra (COVID-related) debt promptly. In the face of growing inequalities, taxing the wealthiest is a just solution to the crisis, which arguably brings little harm to the economy. Cf. <https://voxeu.org/article/progressive-european-wealth-tax-fund-european-covid-response>.

issuance of regeneration bonds are common and the levels of repayment of the bond servicing costs can be decoupled from the amount of base income in each Member State.

The issuance of bonds may take place without violating the prohibition on monetizing public debt. Indeed, central banks can secure the debt service by providing public guarantees to public credit institutions purchasing these bonds. This situation is anticipated in Article 123 paragraph 2 TFEU. The provision does not prohibit the ECB or national central banks from buying securities from credit institutions, even if they are publicly owned or if they are publicly issued by public sector entities.

4. Legal framework

4.1. General review

From a legal perspective, the designed instrument should be seen on two levels.

On the one hand, at the level of values which the Instrument safeguards for the time necessary to achieve its objective (Social Policy Instrument). On the other hand, at the level of the objective of its establishment (Health Policy Instrument), which is to extinguish existing pandemic outbreaks, to interrupt the transmission of SARS-CoV-2 and to avoid a new wave of infections, in a way that allows at the same time for ongoing monitoring and management of the pandemic, which is justified by Article 168(1) TFEU.

The EU is not an *ad hoc* anti-pandemic community and the values being secured go far beyond the public health domain in the sense of Title XIV TFEU. The Instrument has therefore been designed as a multi-level instrument of social policy within the meaning of Title X TFEU, integrating a universal standard and a local standard (of Member States) for the protection of the social and economic rights of the individual at EU level, without prejudice to the competence of Member States to act in this field (Article 2(2) TFEU) and respecting the diversity of national practices, as well as preserving the competitiveness of the economy (Article 151(2) TFEU). This is the area that best fits the logic, purpose and direction of the expenditures. Above all, however, it is the area most closely linked to the axiology expressed in the fundamental principles and objectives of the EU in its present state (Articles 2 and 3 TEU).

Nowadays, there is no doubt that a well-conducted social policy favourably supports employment policy (TFEU Article 151 paragraph 1) and economic policy through harmonisation of the common market (TFEU Article 151 paragraph 3). Indeed, it is difficult to imagine the common internal market in its current state without undertaking a social policy aimed at EU citizens who make up that market during the COVID-19 pandemic (Article 3(2) TEU).

It should be remembered that it was for this reason, among others, that at least at the stage of the Single European Act of 1986 the common market was linked to the common social and employment policy, and this happened in response to the economic crisis at the turn of the 1970s and 1980s in Europe. It was then recognised that the European Economic Community was more than just a common market (Articles 21–23 SEA—social policy; Title V SEA—economic and social cohesion).

This process was constitutionalised by the signing in 2000 of the Charter of Fundamental Rights of the European Union,⁸ which acquired the same legal value as the Treaties (Article 6(1) TEU).

In this context, the EU as we know it today has definitively ceased to be a European Economic Community with the sole aim of developing the internal market (Article 3(1), (3), subparagraphs 2 and 3 of the TEU).

From this perspective, especially in the era of the COVID-19 Pandemic, the essence of conducting social policy at the EU level is not to make social transfers (which is what we used to argue about), but to secure the common values for which a given standard of protection was established. It should be remembered that this is a matter of objective legal order regardless of one's declared side in the current political dispute (Article 1 TEU).

The essence of social policy is the right to social security,⁹ which is one of the fundamental human rights (Article 22 of the UDHR) linked to economic and social rights. Therefore, this right has been confirmed by the International Covenant on Economic, Social and Cultural Rights (Article 9 ICESCR). The EU is committed to making this right a reality internally (Article 2 TEU), externally (Article 3(4) TEU) and, in addition, has developed this right (Article 34 of the Charter of Fundamental Rights).

⁸ In its preamble, the Charter reaffirms the rights as they result from the constitutional traditions and international obligations of the Member States, the European Convention on Human Rights and Fundamental Freedoms and the Social Charters adopted by the Union and by the Council of Europe, as well as from the case law of the Court of Justice of the European Union and of the European Court of Human Rights. The Charter further provides that the Union is founded on the indivisible, universal values of human dignity, freedom, equality and solidarity; it is based on the principles of democracy and the rule of law. By establishing the citizenship of the Union and by creating an area of freedom, security and justice, it places the individual at the heart of its activities.

⁹ Article 22 of the UDHR provides that every person, as a member of society, has the right to social security and is entitled to the realization, through national efforts and international cooperation, of his economic, social and cultural rights, necessary for retaining his dignity and for the unrestricted development of his personality.

4.2. From Social Policy to Political Rights (in times of COVID-19)

The lowering of the standard of social security, and consequently of the protection of social and economic rights as a result of the COVID-19 pandemic, undermines the standard of protection of the political rights of EU citizens. The interrelation of what is referred to as the various generations of human rights is most clearly demonstrated by the ECHR judgment in the case of *Airey v. Ireland* (Application no. 6289/73).¹⁰ Unfortunately, the social security standard is also violated by the failure to exercise the competence that is supposed to implement this standard (Article 4(2)(b) in conjunction with Article 153 TFEU).

We raise this issue because during the COVID-19 pandemic, the EU abandoned its Treaty competencies in the field of social policy (Article 151(1) TFEU), failing to take any action towards the social protection of its citizens in terms of employment security, social conditions, or inequalities, areas of social life most affected by the COVID-19 pandemic. A similar failure to exercise Treaty competence occurred in the field of public health, where the EU has also failed to introduce any anti-pandemic instrument.

But the COVID-19 crisis is not just a crisis of public health, of social policy, or an economic crisis such as the one that led to the linkage of the Common Market with the Common Social Policy in the late 1970s and early 1980s.

The COVID-19 crisis should be seen as a humanitarian crisis in the context of the risk of falling into poverty faced by EU citizens, as explicitly raised in the Council Regulation establishing the Next Generation EU.¹¹ This means that this crisis is primarily a social, economic, and political crisis. In terms of the Treaty, the crisis covers practically all spheres of EU competence, up to tourism (Title XXII TFEU), which was also noticed in the above-mentioned regulation. The experience of poverty covers all spheres of the social, economic, and political activity of individuals.

However, contrary to what is already declared in the first theme of Council Regulation 2020/2094,¹² the EU Next Generation Instrument is not in any way a post-pandemic instrument aimed at containing such a crisis, or even at ‘containing the spread of COVID-19’ as such. The Instrument is a comprehensive set of post-pandemic measures for a multi-annual plan for the reconstruction and transformation of the EU economy following the adverse economic effects of

¹⁰ *Airey v. Ireland*, Judgment, Merits, App No. 6289/73 (A/32), [1979] ECHR 3, (1980) 2 EHRR 305, IHRL 23 (ECHR 1979), 9 October 1979, European Court of Human Rights [ECHR].

¹¹ See motif (2) of Council Regulation 2020/2094.

¹² See motif (1) of Council Regulation 2020/2094.

COVID-19.¹³ This makes this instrument even less an instrument for increasing resilience, social support, social harm, social protection and health care, as has been repeatedly argued,¹⁴ apart from the fact that the financing of this instrument is still open.

From this perspective, we have all the reasons, including those based on our own country's, and generation's experience,¹⁵ to believe that the experience of poverty in this generation—to which a large proportion of EU citizens are exposed, and which has been acknowledged by the Council—will lead to an erosion of the rule of law throughout Europe, and resentment towards strong nation-states. The experience of poverty leads in the first place to the marginalization and exclusion of the individual, to a permanent loss of security, and to a feeling of inability to act, which delegitimizes the objectives of the current political community in which the individual participates and, as a result, of the community itself.

And we are not alone in our experiences and claims. Similar conclusions should be drawn from the report *Voices of The Poor* of the World Bank,¹⁶ where poverty was presented as a multidimensional social phenomenon observed on many levels, beginning with the loss of means of subsistence, through the loss of status of an individual who has a job, his/her psychological well-being, violence, including violence against women and children, increased crime, to the stability of socio-cultural norms and the relation of the individual to the state, and more broadly to the political community.

¹³ See motif (3), (4), (6) (8); see also Article 1 paragraphs 1 and 2, and Article 2 paragraph 2 Council Regulation 2020/2094.

¹⁴ See motifs (2), (5), (7) Council Regulation 2020/2094. We warn here against the instrumental use of notions characterizing the elements of social security that have their basis in the Treaty, without the intention of actually undertaking a social policy, but for ad hoc diversification and smoothing of economic policy instruments aimed at achieving a completely different, although equally important goal. Such actions lead to a re-politicization of notions constitutive for a certain legal order, and thus to a gradual loss of their normative content and their delegitimization.

¹⁵ One of the causes of the rule of law crisis in our country is the result of a dispute over the public-legal socio-economic status of the individual, a dispute that began in the era of economic transformation that took place in our country after 1989. This dispute has involved several million citizens who have experienced poverty, to a degree, scale, and depth unimaginable in Western Europe west of Berlin. In Poland, the disappointments brought about by the unfulfilled promises of social policy in the era of economic and political transformation in the 20th century (against the backdrop of new economic and cultural challenges) has undermined the political and social identity of the individual, arousing resentment towards the strong homogeneous nation-state of the 21st century that we see today.

¹⁶ World Bank, *Voices of the Poor, Can Anyone Hear Us?*, D. Narayan et. al, March 2000, pp. 32 and next.

As Irene Khan, the Secretary-General of Amnesty International states my experience tells me that poverty is a denial of human rights and an affront to human dignity.¹⁷

The experience that we are writing about—and which is also the experience of our generation and the country during the 1989 political transformation—may soon become a common experience among EU citizens due to the lack of EU action to stop the COVID-19 pandemic, without accompanying social policy measures, as we have outlined in section 4.1.

The inaction of the EU may have serious consequences. There is a fine line between an occasional non-exercise of competencies and Treaty objectives at the EU level, an acknowledgment that certain obligations may also be non-exercised at the national level (Poland, Hungary), or permanently withdrawn (United Kingdom).

The proposed This Generation (EU) NOW Instrument will close this gap. It is a counter-pandemic social policy instrument of This Generation. The welfare and public legal status of the individuals of the present generation rather than of subsequent generations will be decisive both for the future reconstruction of the EU economy and for the European political project in general.

After all, as Michelle Bachelet, the UN High Commissioner for Human Rights, argues: ‘There does not have to be a trade-off between growth and social protection. A democracy does not mean much if it doesn’t respond to the needs and will of its people’.¹⁸

4.3. Legal basis for establishing the instrument

The limits of the EU’s competences are determined by the principle of conferral of powers (Article 5(1) TEU), to achieve a specific objective (Article 5 (2) TEU). The areas, limits, and conditions for the exercise of competence are determined by the TFEU as laid down in Articles 1(1) and 7 of the Treaty. The exercise of EU’s competence is furthermore based on the principles of subsidiarity and proportionality (Article 5(3) and (4) TEU), which define the scope and modalities of EU activity (Protocol No. 2 TFEU). In exercising its competence, the EU shall take into account requirements related to the promotion of a high level of employment, the guarantee of adequate social protection, the fight against social exclusion, and a high level of education, training, and protection of human health (Article 9 TFEU).

¹⁷ I. Khan, D. Petrasek, *The Unheard Truth: Poverty and Human Rights*, W.W. Norton & Company 2009, pp. 3 and next.

¹⁸ This thought has become the guiding principle for efforts to realize the individual’s right to social security in a universal system, see:
<https://www.ohchr.org/en/issues/rightsocialsecurity/pages/socialsecurity.aspx>.

The scope and conditions for the exercise of EU competences are determined by the field of activity, by identifying each of the fields in which the EU operates, and defined in the specific parts of the TFEU covering this area.

The purpose of setting up the Instrument its logic and the direction for its disbursement, for reasons explained in section 4.1., fully corresponds to one of the main fields of action of the EU, which is social policy. This area falls under shared and explicit Union competence (Article 4(2)b TFEU) and, besides, competence to coordinate Member States' policies (Article 5(3) TFEU). The details of the implementation of EU's policy in this area are set out in Articles 151–161 TFEU.

Article 151(1) TFEU provides that the Union and the Member States, having in mind fundamental social rights such as those set out in the European Social Charter signed at Turin on 18 October 1961 and in the 1989 Community Charter of the Fundamental Social Rights of Workers, shall have as their objectives the promotion of employment, improved living and working conditions to make possible their harmonisation while the improvement is being maintained, proper social protection, dialogue between management and labour, the development of human resources with a view to lasting high employment and the combating of exclusion.

To this end, the Union and the Member States shall implement measures which take account of the diverse forms of national practices, in particular in the field of contractual relations, and the need to maintain the competitiveness of the Union's economy (Article 151(2) TFEU). European Temporary Basic Income fulfils both conditions because at the EU level it complements diverse national practices promoting economic development while maintaining the competitiveness of the EU economy, fostering the harmonisation of social systems (Article 151 paragraph 3 TFEU).

For these reasons, we recommend that the designed Instrument should be set up based on the second paragraph of Article 151 TFEU on the terms of Article 352(1) TFEU.

This solution is the most appropriate, most effective in terms of legislation, and at the same time, one that creates wide possibilities of shaping the terms of long-term (or, alternatively, perpetual) bond issuance for the needs of the Instrument, as was the case with the financing source Next Generation EU. The setting up of the Instrument in this procedure does not necessitate the alignment of the Instrument with the Common Strategic Framework and, therefore, does not infringe the review requirement within the meaning of Article 12 of the EU Regulation 1303/2013(1), while also simplifying the procedure for consultation of the committees listed in Article 153(2) TFEU, without prejudice to the competences assigned to

those committees as the scale of EU action in the case of the Instrument to be adopted is multi-level and cross-domain.

This solution consists in combining the competence conferred to the EU to implement its policies in a specific area with the power to act in a specific way if this proves necessary for the EU to attain one of the objectives set out in the Treaties. As argued in section 4.2., the ongoing COVID-19 pandemic is causing the related crisis to affect virtually all areas of EU competence, making it impossible to achieve Treaty objectives.

The recommended solution was applied, for example, in:

1. Regulation (EC) No. 883/2004 of the European Parliament and of the Council of 29 April 2004 on the coordination of social security systems;¹⁹
2. Council Regulation (EC) No. 2012/2002 of 11 November 2002 establishing the European Union Solidarity Fund;²⁰
3. Council Regulation (EC) No. 515/97 of 13 March 1997 on mutual assistance between the administrative authorities of the Member States and cooperation between the latter and the Commission to ensure the correct application of the law on customs and agricultural matters.²¹

Moreover, in the judgment of 3 September 2009 in Case C-166/07 Parliament v. Council (ECLI:EU:C:2009:499), the CJEU indicated that in the legal basis of Council Regulation (EC) No. 1968/2006 of 21 December 2006 concerning Community financial contributions to the International Fund for Ireland (2007–2010), the Community Legislator should have applied the third paragraph of Article 159 EC (third paragraph of Article 175 TFEU) and Article 308 EC (Article 352 TFEU) together. This is because Article 159 EC applies only to autonomous Community actions governed by Community rules whose content does not fall outside the scope of Community economic and social cohesion policy (see paragraphs 69 and 64 of the judgment).

¹⁹ Regulation (EC) No. 883/2004 of the European Parliament and of the Council of 29 April 2004 on the coordination of social security systems. Text with relevance for the EEA and for Switzerland (OJ L 166, 30.4.2004, pp. 1–123).

²⁰ Council Regulation (EC) No. 2012/2002 of 11 November 2002 establishing the European Union Solidarity Fund (OJ L 311, 14.11.2002, pp. 3–8).

²¹ Council Regulation (EC) No. 515/97 of 13 March 1997 on mutual assistance between the administrative authorities of the Member States and cooperation between the latter and the Commission to ensure the correct application of the law on customs and agricultural matters (OJ L 82, 22.3.1997, pp. 1–16).

Finally, we recommend that the legal basis of the Instrument should be related to Article 168(1) TFEU. This solution would allow the Instrument to be supported by Union action to complement national policies in the area of public health (Title XIV TFEU), particularly in response to the pandemic, to achieve the desired anti-pandemic objectives for the duration of the European Temporary Basic Income.

5. Epidemiological basis for establishing the instrument

5.1. General review

The central scientific basis for the Zero-COVID strategy in Europe is the possibility to shift from the *mitigation regime*, thus far adopted in Europe with little success, to an elimination regime, which has been used effectively in China, Taiwan, Vietnam, Singapore, Australia and New Zealand, as well as in the Atlantic provinces of Canada.

In the mitigation regime, persistent viral transmission drives episodic increases in cases (waves). Governments then implement societal wide restrictions on gatherings and economic activities (lockdowns) in order to suppress these waves. The health, social and economic costs are extraordinarily large from these episodes sometimes termed ‘yo-yo lockdowns’. The irony of the mitigation regime is it seeks to strike a balance between socio-economic costs and disease suppression by tolerating some degree of transmission, but the overall dynamic of the mitigation strategy leads to catastrophically high economic costs and loss of life and health.

In contrast, in the elimination regime, there is a concerted effort to achieve a Zero-COVID state in which much of the time no transmission is present. When a few new cases do appear in the elimination regime, contact tracing is used to stop the transmission. When a larger outbreak occurs during the elimination regime, the outbreak is locally confined by rapid societal action (often a short, strict lockdown) to prevent transition to the mitigation regime. The elimination regime can be considered to be a ‘fire-fighting’ regime. Just as widespread fires are not present in society but local fires may occur and be extinguished by fire-fighters to prevent their growth, so in this epidemiological setting, outbreaks are not allowed to grow to become widespread, but are extinguished before they do so. While it requires initial upfront costs, this regime has been shown to be much less harmful on all counts—schools and businesses remain open and there are minimal levels of illness and death from COVID-19. It is easy to understand why this is the case, as the persistent state of the elimination regime is a pre-pandemic condition, while deviations are contained rapidly and the short duration and geographical extent of those outbreaks involve both fewer infections and more limited economic and social consequences.

The key, however, to zeroing out transmission and thereby ‘returning to normal’ is to reduce the barriers that impede the transition from the mitigation regime to the elimination regime. This is where there are linked social, epidemiological and economic strategies to be brought to bear and the Zero-COVID instrument plays a key role. In particular, Zero-COVID reduces the barrier to individuals and organizations to allow their engagement in a short transition process, which results in the transition from mitigation to elimination.

The essential action needed to achieve the transition to the elimination regime is a near total closure of economic activities that drives cases to transmission to zero. The strain of income loss for individuals, as well as the loss of financial flows for businesses, is difficult to bear, leading to high pressures on political leaders to stop the necessary action before its completion. Hence there are two components of a practical strategy:

1. How to shorten the duration of the closure (often termed ‘lockdown’).
2. How to support individuals and organizations during this period.

The latter is the purpose of the Zero-COVID instrument described in prior sections. The former is the subject of the next section.

5.2. Seven components of a practical strategy

In order to understand the duration of the closure, it is helpful to understand the following:

1. *Green Zone Strategy*. The duration of the closure is reduced dramatically by adopting a ‘Green Zone’ strategy. In the Green Zone strategy, partial epidemiological separation is achieved between geographical regions so that the number of cases that must be controlled is reduced to that within a particular zone—smaller epidemiological units allow for faster elimination. In order to achieve this epidemiological separation, travel between zones must be limited to essential travel, appropriately defined, including allowing commuters who are given guidelines for prevention of transmission. Travel restrictions are also key to controlling the spread of new variants. Travel restrictions have been difficult to discuss in a European context. However, almost all countries have discovered the essential nature of travel restrictions in pandemic control. There is now a manifest need to use them in a concerted way so that the change to the elimination regimes becomes practical. The essential point is that the smaller the zone, the more rapid the elimination process can be achieved (as reflected in the lower starting point in the number of cases), and the lower the social and economic barrier to accomplishing it. This is a classic divide and conquer strategy. Acting at a country, county, or municipality level

makes the elimination process progressively easier. Indeed, at this local level many areas are likely to be at the elimination limit at most times even for high case numbers nationally. As can be seen in the following points, it is optimal to separate countries into zones where the initial number is in the range of 10s to 100s of cases.

2. *Societal Buy-In Shortens Lockdowns.* The duration of the closure is reduced in direct relation to the diligence of individuals and communities—not just governments in preventing transmission. This includes general precautions performed by individuals by avoiding contact with others and precautions taken in the context of essential economic activities including essential services such as supermarket and pharmacy shopping. In addition, individuals can speed up case identification in the community and follow-up actions, including protecting housemates and family members from infection through isolation and quarantine. In general, with some exceptions, the halving rate for transmission that has been achieved in many locations ranges between five and twelve days. A five-day halving time through diligence of community-based activities to stop transmission is achievable, resulting in 50–100X reduction in new cases per month. A ten-day halving time would result in the same reduction taking two months. Shortening the duration of the lockdown is one of the ways to make it easier to switch between mitigation and limitation. Public awareness of the drive for elimination and its benefits motivates this diligence. A competitive spirit between zones in a race to zero can advance it as well.
3. *Resisting Temptation to End Lockdown Early.* Going from 10,000 cases to 100 cases takes the same time as going from 100 cases to 1 case. There is typically significant societal support to go from 10,000 to 1,000 or even 100: individuals see their friends and family getting sick and governments fear political backlash from overflowing hospitals. But maintaining lockdown measures to get from 100 cases per day to 1 can seem unnecessary to individuals, businesses, and governments. However, failing to maintain the closure will allow cases to rise again. The key is to complete the elimination process once the cases become low and achieve conscious recognition and public appreciation of the final stage of the process, the countdown to zero. The use of the Green Zone strategy makes this much more feasible, as local areas are rewarded for eliminating transmission locally. When an individual knows that their neighbourhood has new cases, they can take restrictions seriously even if the country as a whole has very few.
4. *Contact Tracing.* The duration of the final stage of the elimination process is sensitive to the availability of ‘comprehensive contact tracing’ that can cut the tail of the process at 5–10 cases by identifying all of the transmission chains and thus achieving zero transmission

once they have been identified. For the purposes of the Zero-COVID strategy, 'good contact tracing' goes far beyond interviewing infected individuals on the telephone and trying to call their listed contacts, as is the current standard in many European countries. Rather, comprehensive contact tracing is a proactive effort of public health investigators racing against time to track down and isolate every possible contact using a range of tools and tactics. For more than about 10 cases, comprehensive contact tracing is not feasible due to the extensive number of contacts of cases. At larger numbers of cases, contact tracing is important primarily in the overall acceleration of decline in transmission, particularly within household transmission through isolation and quarantine.

5. *Vaccines.* Vaccines can be helpful in reducing the severity of cases and transmission within the population. Their effectiveness in doing so may be undermined by new variants so that the time scale of developing, testing and rolling out vaccines may limit their effectiveness for rapid elimination. They should be considered as a tool and not as a solution by themselves. Historically, it is a combination of strong social action to prevent transmission and vaccination that is effective at achieving elimination in many diseases and zoonotic outbreaks in particular.
6. *Duration of Closures.* With these points, we can understand that the limit of the duration of closure is four to six weeks. There is an initial two-week incubation period during which it is possible to identify cases in the community, followed by a two-week period due to transmission that occurred in the initial two-week period between housemates despite strong closure actions. Four weeks is often sufficient to achieve a Zero-COVID condition, though an additional two-week period may be needed if there is leakage due to the limited effectiveness of all of the components of the action.
7. *Reopening after Achieving Elimination.* When considering the financial burden of the closure, it is both important to understand the duration of the closure and the process of restoring normal activity. This includes progressively opening up areas that have achieved Zero-COVID and enabling them to reconnect with each other through travel. Since many areas are at zero at four weeks and others join them in successive weeks, much of the economy can be restored even if certain areas remain closed for a few more weeks. The process of opening up also requires caution. So, it is advisable to add two to three weeks more to the process for that purpose. The first two weeks after achieving zero can allow limited opening, and most of the opening occurs thereafter. The economic burden however can be localized progressively as this happens.