

By Philip Loft

11 January 2022

# Covax and global access to Covid-19 vaccines

COVAX



## Summary

- 1 Background: The pandemic
- 2 What is Covax?
- 3 What progress has Covax made?
- 4 What challenges exist for vaccine administration and delivery?
- 5 Further reading and data sources

### Image Credits

Attribution: Adobe Stock 398958886 Editorial Use Only – [Covax vaccine and glass medical vials with liquid by Vladimirezuev](#) – Adobe Stock (stock.adobe.com). Adobe Stock License. / image cropped.

### Disclaimer

The Commons Library does not intend the information in our research publications and briefings to address the specific circumstances of any particular individual. We have published it to support the work of MPs. You should not rely upon it as legal or professional advice, or as a substitute for it. We do not accept any liability whatsoever for any errors, omissions or misstatements contained herein. You should consult a suitably qualified professional if you require specific advice or information. Read our briefing [‘Legal help: where to go and how to pay’](#) for further information about sources of legal advice and help. This information is provided subject to the conditions of the Open Parliament Licence.

### Feedback

Every effort is made to ensure that the information contained in these publicly available briefings is correct at the time of publication. Readers should be aware however that briefings are not necessarily updated to reflect subsequent changes.

If you have any comments on our briefings please email [papers@parliament.uk](mailto:papers@parliament.uk). Please note that authors are not always able to engage in discussions with members of the public who express opinions about the content of our research, although we will carefully consider and correct any factual errors.

You can read our feedback and complaints policy and our editorial policy at [commonslibrary.parliament.uk](https://commonslibrary.parliament.uk). If you have general questions about the work of the House of Commons email [hcenquiries@parliament.uk](mailto:hcenquiries@parliament.uk).

# Contents

<b>Summary</b>	<b>5</b>
<b>1 Background: The pandemic</b>	<b>7</b>
1.1 Impact	7
1.2 Vaccination and recovery	7
<b>2 What is Covax?</b>	<b>8</b>
2.1 A global initiative	8
2.2 Countries eligible for support	8
2.3 Funding pledges to Covax	10
<b>3 What progress has Covax made?</b>	<b>11</b>
3.1 Plan to distribute 1.8 billion doses by 2022	11
3.2 Has procured 6 billion potential doses	11
3.3 Covax deliveries to low-income counties	12
3.4 The future of Covax	14
<b>4 What challenges exist for vaccine administration and delivery?</b>	<b>15</b>
4.1 Supply-side challenges	15
4.2 Challenges to vaccine rollouts	18
<b>5 Further reading and data sources</b>	<b>23</b>



---

## Summary

The purchasing and administering of Covid-19 vaccines has been unequal globally. As of 7 January 2022, only [9% of people in low-income countries](#) (having a Gross National Income (GNI) per capita below US \$1,045) have received at least one vaccine dose. This compares to 77% in high-income states (GNI per capita above US\$ 12,696).

[The Covax initiative](#), which was established in April 2020, aims to ensure fair access to Covid-19 vaccines worldwide. For 92 low-income economies, it plans to donate sufficient doses [to vaccinate around 30% of their populations in 2021 and 2022](#), under its Advance Market Commitment (AMC) scheme. Covax is jointly administered by the World Health Organization (WHO), Gavi, the Vaccine Alliance, and the Coalition for Epidemic Preparedness Innovations.

Covax has struggled to meet its vaccination goals, partly due to difficulties in procuring vaccines, but also the challenges in administering vaccines in countries where logistical and health infrastructure is weak.

At the G7 summit hosted by the UK in June, G7 leaders pledged to [donate 870 million doses](#) to Covax by June 2022. This included a commitment by the UK to [donate 100 million doses to other countries](#), including 80 million via Covax. Progress against this pledge is described in the Library's [UK and G7 commitments to donate coronavirus vaccines](#).

This briefing describes how Covax works, how many deliveries it has made, and the challenges it faces in administering vaccine campaigns globally.

### How does Covax work?

The Covax scheme uses funding from donor organisations and governments and self-financing member countries to support the research, manufacture, and distribution of Covid-19 vaccines. Covax has procured around [6.5 billion doses of Covid-19 vaccines](#) for its self-funding and AMC participants, including 1.6 billion donated doses.

While its self-financing members, such as Canada, Saudi Arabia and South Africa are required to pay for vaccines procured via Covax, [eligible low and lower-middle income economies](#) receive doses for free. This includes Ethiopia, Nepal, and Sudan. To ensure fairness, all states will [first receive doses in proportion to their population](#), until 30% are vaccinated, in the first instance.

## Covax's struggle to meet its vaccination goals

In February 2021, the [rollout of Covax vaccines began](#). Despite the goal [to distribute 170 million doses](#) by 31 May, [only 76 million were delivered](#). In July, Gavi estimated that Covax would [deliver 2.2 billion doses](#) by January 2022, but this estimate was [reduced in December to 1.2 billion \(opens pdf\)](#) by the end of 2021.

## Challenges to supply and distribution

There are several factors affecting Covax's ability to procure enough vaccines.

These include the Indian Government [halting the export of vaccines](#) in April 2021 as the [pandemic worsened](#) there. This affected one of the largest suppliers to Covax, the Serum Institute, which was due to [supply a total of 1.1 billion doses](#). Indian exports [resumed in October 2021](#).

Global manufacturing capacity for vaccines also needed to increase in 2021. In March 2021, the World Trade Organization (WTO) said production needed to [triple from 5 to 15 billion in 2021](#). In September 2021, the International Federation of Pharmaceutical Manufacturers and Associations [projected that vaccine production may reach 12 billion by the end of the year](#).

Many high-income countries have also procured more doses compared to low-income ones. In March 2021, high-income countries, which account for 16% of the global population, had [negotiated supply agreements amounting to around half the world's supply](#).

Countries including [South Africa](#), the [US](#), [France](#) and [India](#) have also argued that patents and intellectual property rights on Covid-19 vaccines should be waived, as a means of boosting global manufacturing. The UK has argued that the intellectual property rights system has [played a "positive role"](#) and generated effective vaccines and therapeutics. Talks at the WTO [are ongoing](#).

The WHO has also criticised [many booster campaigns](#), reflecting fears these may make countries [less willing to share vaccines](#). The UK Government has defended the UK's booster campaign, stating it is implementing [the advice of the Joint Committee on Vaccination and Immunisation](#).

## G7 and other pledges to donate vaccines

In June 2021, G7 members [pledged to share one billion vaccines by June 2022](#). Half will come from the US. [870 million will be via Covax](#).

The [UN](#) and [WHO](#) have welcomed the pledge, but urged the doses to be donated during 2021, rather than in 2022. The UK [donated 30 million doses to countries by the end of 2021](#), in line with the government's target. An [additional 70 million doses](#) are intended to be shared by June 2022.

---

# 1 Background: The pandemic

## 1.1 Impact

Since January 2020, globally there have been over 290 million confirmed cases of Covid-19 and 5.4 million deaths.<sup>1</sup> As of 31 December 2020, when 1.8 million Covid-19 deaths were recorded, World Health Organization (WHO) experts estimated there were also [at least 3 million excess deaths](#), if deaths due to related impacts such as reduced hospital capacity are included.<sup>2</sup>

The pandemic has also had significant secondary effects on education, poverty, and health services. The World Bank has estimated that the pandemic pushed 97 million people into poverty in 2020.<sup>3</sup> In April 2021, 90% of countries reported disruption to their health systems, and, by March 2021, two-thirds of the world's student population had experienced school closures.<sup>4</sup>

## 1.2 Vaccination and recovery

International organisations have said the rollout of vaccines is necessary to save lives, reduce the likelihood of new variants of concern, and enable economic recovery. It is uncertain what proportion of the population needs to be vaccinated to safely achieve global immunity, but the WHO has set a target for [70% of the world to be vaccinated](#) by mid-2022.<sup>5</sup>

The International Monetary Fund (IMF) says the “main factor” weighing on the recovery of low-income economies is [their slow vaccine rollout](#). In October 2021, the IMF estimated that in 2021 [low-income economies are likely to expand by 3%](#), compared to 5% in advanced economies like the UK.<sup>6</sup>

---

<sup>1</sup> WHO, [Covid-19 dashboard](#), accessed 8 December 2021

<sup>2</sup> WHO, [Covid-19 responsible for at least 3 million excess deaths in 2020](#), 20 May 2021, accessed 8 December 2021

<sup>3</sup> World Bank, [Updated estimates of the impact of Covid-19 on global poverty](#), 24 June 2021, accessed 8 December 2021

<sup>4</sup> WHO, [Covid-19 continues to disrupt essential health services in 90% of countries](#), 23 April 2021; UNESCO, [One year into Covid-19 education disruption: Where do we stand?](#), 19 March 2021, both accessed 8 December

<sup>5</sup> WHO, [WHO, UN set out steps to meet world COVID vaccination targets](#), 7 October 2021, accessed 8 December 2021

<sup>6</sup> IMF, [World economic outlook: Recovery during a pandemic](#), October 2021, pp4, 7, accessed 8 December 2021

---

## 2 What is Covax?

### 2.1 A global initiative

---

Covax is an abbreviation of Covid-19 Vaccines Global Access

In April 2020, Covax was established as a [global initiative](#) to ensure equitable access to Covid-19 vaccines between countries, regardless of their income level. It functions by pooling global funding to invest in the research, manufacture, purchase, and distribution of vaccines.

Vaccines are either distributed at a cost for participating higher-income states or as donations to eligible low- and middle- income countries. Covax seeks to allocate vaccines fairly, distributing them according to population size and need.<sup>7</sup>

It is jointly directed by the Coalition for Epidemic Preparedness Innovations (CEPI), Gavi, the vaccine alliance, and the WHO. Unicef is a delivery partner.

### 2.2 Countries eligible for support

Countries participate in one of two schemes.

#### **Advance Market Commitment (AMC) for low- and middle- income countries**

The [92 eligible low- and middle- income economies](#) include Afghanistan, Yemen, Ethiopia, and Nepal. They have a total population of 3.9 billion.<sup>8</sup>

The AMC list includes all economies with a Gross National Income per capita of less than US\$ 4,045 and economies eligible for [certain World Bank support](#).<sup>9</sup> While India is included as one of the 92 AMC economies, accounting for 35% of their total population, Covax intends to provide around 7-9% population coverage for India in the near term, rather than 20% for the others.<sup>10</sup>

---

<sup>7</sup> Gavi, [Covax explained](#), 3 September 2020, accessed 8 December 2021

<sup>8</sup> WHO, [Costs of delivering Covid-19 vaccine in 92 AMC countries](#), February 2021, table 2, accessed 8 December 2021

<sup>9</sup> World Bank, [Borrowing countries](#), accessed 8 December 2021

<sup>10</sup> R. Agarwal and G. Gopinath, [Annex 1: Existing pandemic financing options for LMICS](#) in the IMF's A proposal to end the pandemic, 19 May 2021, accessed 8 December 2021

<b>Gavi-COVAX AMC-eligible countries &amp; economies</b>			
At July 2020			
<b>Low-income</b>			
Afghanistan	Ethiopia	Malawi	South Sudan
Benin	Gambia	Mali	Syrian Arab Republic
Burkina Faso	The Guinea	Mozambique	Tajikistan
Burundi	Guinea-Bissau	Nepal	Tanzania
Central African Rep.	Haiti	Niger	Togo
Chad	Korea, Dem. People's Rep	Rwanda	Uganda
Congo	Liberia	Sierra Leone	Yemen, Rep
Eritrea	Madagascar	Somalia	
<b>Lower-middle income</b>			
Angola	El Salvador	Moldova	Sudan
Algeria	Eswatini	Mongolia	Timor-Leste
Bangladesh	Ghana	Morocco	Tunisia
Bhutan	Honduras	Myanmar	Ukraine
Bolivia	India	Nicaragua	Uzbekistan
Cabo Verde	Indonesia	Nigeria	Vanuatu
Cambodia	Kenya	Pakistan	Vietnam
Cameroon	Kiribati	Papua New Guinea	West Bank and Gaza
Comoros	Kyrgyz Republic	Philippines	Zambia
Congo, Rep	Lao PDR	São Tomé and Príncipe	Zimbabwe
Côte d'Ivoire	Lesotho	Senegal	
Djibouti	Mauritania	Solomon Islands	
Egypt, Arab Rep.	Micronesia	Sri Lanka	
<b>World Bank International Development Association eligible economies</b>			
Dominica	Guyana	Marshall Islands	St. Vincent and the Grenadines
Fiji	Kosovo	Samoa	Tonga
Grenada	Maldives	St. Lucia	Tuvalu

Source: Gavi, [92 low- and middle-income economies eligible to access Covid-19 vaccines through Gavi Covax AMC](#), July 2020, accessed 8 December 2021

## Self-financing programme for high and upper-middle income countries

The 76 participants of the self-financing programme include the UK, EU, Brazil, Canada, and China.<sup>11</sup> Although they are eligible to request doses for up to 50% of their populations, they will not receive doses via Covax for more than 20% until all 92 AMC countries have.<sup>12</sup> Canada, the UK and Australia [have drawn upon Covax for their vaccines](#). The UK received 539,000 doses.<sup>13</sup>

<sup>11</sup> Covax, [Self-financing countries](#) (opens pdf), 12 May 2021, accessed 8 December 2021

<sup>12</sup> Gavi, [Covax explained](#), 3 September 2020, accessed 8 December 2021

<sup>13</sup> Unicef, [Covid-19 vaccine market dashboard](#), accessed 8 December 2021

## 2.3

## Funding pledges to Covax

The Covax AMC is funded through official development assistance (ODA) and private sector contributions, as well as through a [cost-sharing approach](#) for ODA-eligible countries.<sup>14</sup> ODA is aid intended to promote the economic welfare and development of developing countries.

To 9 November 2021, a [total of US\\$ 10.1 billion was pledged](#) (pdf) from all donors. The UK has made the fourth largest commitment, at US\$ 735 million. This is behind the US (US\$ 3.5 billion), Germany (US\$ 1.1 billion), and Japan (US\$ 1 billion).<sup>15</sup>

The UK Government has also stressed the public funding provided for the Oxford-AstraZeneca vaccine. Around 97% of its funding came from public sources, such as from governments, universities, and charities.<sup>16</sup> Around [2.5 billion doses of the vaccine have been administered worldwide](#).<sup>17</sup>

### Calls for additional UK funding

In August 2021, the UK received an estimated £20 billion (US\$ 28 billion) of [Special Drawing Rights](#) (SDRs) (a type of reserve currency that can be exchanged for national currencies) from the US\$ 650 billion being issued by the IMF.<sup>18</sup> SDRs are being provided to most countries to support them recover from the pandemic.

Opposition figures in the UK have called for G7 states to use the SDRs to help [purchase vaccines](#) for Covax and low-income countries.<sup>19</sup>

The Government has said around 20% of the UK's allocation (£4 billion) will be [channelled to vulnerable countries](#), including via the IMF to provide zero-interest loans to low-income countries.<sup>20</sup>

<sup>14</sup> Gavi, [Briefing note: Cost sharing—Covax AMC participants](#), 19 November 2020, accessed 8 December 2021

<sup>15</sup> Gavi, [Covax AMC donors table](#), 9 November 2021, accessed 8 December 2021

<sup>16</sup> The Guardian, [Oxford/AstraZeneca Covid vaccine research “was 97 percent publicly funded.”](#) 15 April 2021, accessed 8 December 2021

<sup>17</sup> Foreign, Commonwealth and Development Office (FCDO) and Department for Health and Social Care, [New support to help vulnerable countries tackle omicron](#), 30 December 2021, accessed 6 January 2022

<sup>18</sup> Centre for Global Development, [Can special drawing rights be recycled to where they are needed at no budgetary cost?](#), 21 April 2021, accessed 8 December 2021

<sup>19</sup> The Guardian, [Covid: More than 200 leaders urge G7 to help vaccinate the world's poorest](#), 6 June 2021; Liam Byrne MP in the Times, [Listen Rishi Sunak, developing countries need vaccines not more debt](#), 14 October 2021, both accessed 8 December 2021

<sup>20</sup> PQ 76596 [[International Monetary System](#)], 24 November 2021

## 3 What progress has Covax made?

### 3.1 Plan to distribute 1.8 billion doses by 2022

In 2021, Covax [secured funding to deliver 1.8 billion doses](#) for lower-income economies in 2021 and early 2022, sufficient to cover 30% of the population in AMC-eligible economies, or roughly half their adult populations.<sup>21</sup>

However, due to delays in procurement and delivery (see section 4), in December 2021 Covax estimated it would [be able to only deliver 1.2 billion doses to AMC economies](#) (opens pdf) by the end of 2021. It said this is equivalent to providing 40% population coverage in all participating countries, except for India.<sup>22</sup>

To 5 January 2022, Covax had allocated around 1.6 billion doses to countries (including self-financing ones), and [shipped 950 million](#).<sup>23</sup>

Those to receive priority doses include health workers, people aged over 65 and those under 65 with underlying health conditions.<sup>24</sup>

### 3.2 Has procured 6 billion potential doses

Covax has potentially procured around 6.5 billion doses of Covid-19 vaccines for its self-funding and AMC-eligible participants, including 1.6 billion donated doses. The figure compares to 4 billion in the case of the EU, 2.6 billion for the US, and 2.3 billion for India.<sup>25</sup>

The totals include those still subject to technical success and regulatory approval.

Covax has received doses from vaccine manufacturers including Johnson & Johnson, Novavax, Pfizer, and Oxford-AstraZeneca.<sup>26</sup>

<sup>21</sup> Gavi, [World leaders united to commit to global equitable access for Covid-19 vaccines](#), 2 June 2021; Gavi, [Japan to host Gavi's Covax AMC summit](#), 12 May 2021, both accessed 8 December 2021

<sup>22</sup> Gavi, [Covax global supply forecast](#), 14 December 2021, p3 (opens pdf).

<sup>23</sup> Unicef, [Covid-19 market dashboard](#), accessed 5 January 2022

<sup>24</sup> WHO, [Fair allocation mechanism for Covid-19 vaccines through the Covax facility](#), 9 September 2020, p25

<sup>25</sup> Duke Global Innovation Centre, [Vaccine purchases](#), accessed 5 January 2022

<sup>26</sup> Gavi, [Covax global supply forecast](#), 8 September 2021, (opens pdf), p7

## 3.3

## Covax deliveries to low-income counties

**What support does Covax provide to recipients?**

Once vaccines are licensed by the WHO, Covax purchases them on behalf of AMC economies. These economies may also cost-share further purchases with Covax in addition to their donor-funded allocation.<sup>27</sup>

Before receiving doses from Covax, participants must first develop a vaccination plan, which is reviewed by the WHO, Unicef, and others. The plan includes providing national regulatory approval for vaccines, setting budgets, and determining priority populations.<sup>28</sup>

The UK has provided support to governments to design their plans.<sup>29</sup>

The WHO's Access to Covid-19 tools (ACT) also provides wider support to recipient countries.<sup>30</sup> Its [strategic plan](#) for October 2021 to September 2022 lays out intentions to:

- Help all countries achieve a minimum of 100 tests per 100,000 inhabitants each day. Most high-income countries achieve around 750.<sup>31</sup>
- Close gaps in access to Covid-19 treatments, including medical oxygen, and procure sufficient personal protective equipment. This will help respond to up to 120 million of the 200 million Covid-19 cases expected from October 2021 to September 2022.<sup>32</sup>

**Africa region**

While the initial aim had been for Covax to deliver 720 million doses to African countries in 2021, the estimate has been reduced to less than 500 million.<sup>33</sup>

Covax now plans to provide a cumulative total of 795 million by the end of March 2022 to sub-Saharan Africa.<sup>34</sup>

---

<sup>27</sup> Gavi, [The Covax AMC explained](#), accessed 8 December 2021

<sup>28</sup> WHO, [Country readiness for Covid-19 vaccines](#), 19 February 2021, accessed 8 December 2021

<sup>29</sup> PQ 179634 [[Coronavirus: Vaccination](#)], 20 April 2021

<sup>30</sup> WHO, [What is the ACT-accelerator](#), accessed 8 December 2021

<sup>31</sup> WHO, [ACT-A strategic plan and budget: October 2021 to September 2022, 28 October 2021](#), accessed 8 December 2021, p14

<sup>32</sup> WHO, [ACT-A strategic plan and budget: October 2021 to September 2022, 28 October 2021](#), accessed 8 December 2021, p19

<sup>33</sup> Reuters, [Covax aims to deliver 520 mln vaccine doses to Africa this year](#), 8 July 2021; Covax, [Covax supply forecast](#), (opens pdf) 8 September 2021, pp13-17, both accessed 8 December 2021

<sup>34</sup> Covax, [Covax supply forecast](#), (opens pdf) 8 September 2021, pp13-17

The WHO hopes that through Covax and other partners, such as the African Union, [30% of the African population will be vaccinated](#) by February 2022, down from an initial target of 60% by the end of 2021.<sup>35</sup>

## Eastern Mediterranean Region (EMR)

This WHO region is made up of 22 countries, half of which are recipients of Covax doses.<sup>36</sup> This includes Syria and Yemen. Up to 275 million doses are expected from Covax by the end of December 2021, down from an estimate of 355 million in January.<sup>37</sup> It hopes to provide 430 million doses by the end of March 2022.<sup>38</sup>

In December, the WHO said that [only 9 of the 22 countries in the region had reached the target to vaccinate 40% of their populations](#) by the end of 2021. Six had vaccinated less than 10% of their populations.<sup>39</sup>

## South East Asia (SEA) region

The WHO region includes India, Nepal, Bangladesh, Sri Lanka, and Indonesia.<sup>40</sup> To the region, Covax intends to provide between 395 million and 645 million vaccines by the end of December 2021, and 915 million by the end of March 2022.<sup>41</sup>

Around 43% of the region's population are fully vaccinated, as of 5 January 2022.<sup>42</sup>

## “Humanitarian buffer”

Covax plans to reserve 5% of Gavi Covax AMC funding for a [“humanitarian buffer.”](#) This stockpile is intended to be used in areas of state failure and conflict, and in regions controlled by non-state armed groups inaccessible to governments.<sup>43</sup>

---

<sup>35</sup> Al-Jazeera, [WHO aims for 30% of needed Africa Covid jabs by February](#), 14 September 2021, accessed 8 December 2021

<sup>36</sup> WHO, [The Covax facility: Interim distribution forecast—latest as of 3 February 2021](#) (opens pdf), accessed 8 December 2021

<sup>37</sup> Covax, [Covax supply forecast](#), (opens pdf) 8 September 2021, pp13-17; Reuters, [Covax to supply 355 million vaccine doses for Eastern Med this year—WHO official](#), 27 January 2021, both accessed 8 December 2021

<sup>38</sup> Covax, [Covax supply forecast](#), (opens pdf) 8 September 2021, pp13-17

<sup>39</sup> WHO EMR, [Statement by WHO's regional director for the EM on Covid-19](#), 22 December 2021, accessed 7 January 2022

<sup>40</sup> WHO, [Countries in the South-East Asia region](#), accessed 5 January 2022

<sup>41</sup> Covax, [Covax supply forecast](#), (opens pdf) 8 September 2021, pp13-17

<sup>42</sup> WHO SEA, [Covid-19 vaccination dashboard](#), accessed 7 January 2022

<sup>43</sup> Gavi, [The Covax humanitarian buffer explained](#), accessed 8 December 2021

Gavi estimates that 66-100 million doses are required for the buffer.<sup>44</sup> In July 2021, Covax said the buffer was [now operational](#) (opens pdf) and had nearly 15 million doses stockpiled.<sup>45</sup>

The first deliveries were made to those in Iran displaced by regional conflict, and Thailand, where 800,000 vulnerable people [would be vaccinated](#).<sup>46</sup>

## 3.4 The future of Covax

Covax has received criticism for being slow to procure and ship doses compared to bilateral donors.<sup>47</sup>

In July 2021, Gavi stressed that while it has missed targets in 2021, it was on track to [deliver 2.2 billion doses](#) by January 2022.<sup>48</sup> However, the latest forecast, published in December 2021, said Covax is likely [to deliver only 1.2 billion doses to AMC economies](#) (opens pdf) by the end of 2021.<sup>49</sup>

In June 2021, Reuters reported that Covax is expected to be [reformed by Gavi](#) to reduce its financial risks and to concentrate on low- and middle- income participants. Many higher-income states are expected to withdraw from Covax, reducing membership from 190 to around 120-130 in 2022.<sup>50</sup>

---

<sup>44</sup> Inter-Agency Standing Committee, [FAQs: The Covax humanitarian buffer](#), 8 November 2021, Q8, accessed 8 December 2021

<sup>45</sup> Gavi, [The humanitarian buffer](#) (opens pdf), 27 July 2021, accessed 8 December 2021

<sup>46</sup> Gavi, [Gavi and humanitarian agencies partner to deliver Covid-19 vaccines to the most vulnerable people in the world](#), 16 November 2021, accessed 8 December 2021

<sup>47</sup> Time, [Covax was a great idea\[...\] What exactly went wrong?](#), 9 September 2021, accessed 8 December 2021

<sup>48</sup> Seth Berkley in The Lancet, [Covax: More than a beautiful idea](#), 14 July 2021, accessed 8 December 2021

<sup>49</sup> Gavi, [Covax global supply forecast](#), 14 December 2021, p3 (opens pdf).

<sup>50</sup> Reuters, [Let down by rich and failing the poor, global vaccine scheme to be shaken up](#), 23 June 2021, accessed 8 December 2021

## 4 What challenges exist for vaccine administration and delivery?

### 4.1 Supply-side challenges

In addition to the underperformance of Covax (itself effected by the factors listed below), there are five other issues potentially impacting on the supply of Covid-19 vaccines worldwide.

#### 1) The pandemic in India in early 2021 and its effects on global vaccine supply

In response to the [extent of its Covid-19 pandemic](#) in early 2021, the Indian Government placed export restrictions on vaccines in April.<sup>51</sup>

This affected one of the largest suppliers to Covax, the Serum Institute, which was due to [supply a total of 1.1 billion doses](#).<sup>52</sup> It was projected that by June 2021, Covax would be around [190 million doses behind schedule](#).<sup>53</sup>

Following the loss of vaccines from India, Covax secured further vaccine agreements. However, these did not result in deliveries until the second half of 2021.<sup>54</sup> As stated above, page 10, Covax has resultingly had to reduce its forecasted projections on the number of vaccines it can deliver.

In October, India [re-commenced exporting vaccines](#).<sup>55</sup> However, in December 2021 the Serum Institute said it would halve production, citing a lack of orders from both India and abroad.<sup>56</sup>

<sup>51</sup> Commons Library, [The pandemic in South Asia: Vaccine supply and health systems](#), May 2021

<sup>52</sup> Unicef, [Director \[...\] remarks at briefing on Covax](#), 3 February 2021, accessed 8 December 2021

<sup>53</sup> Devex, [India crisis puts Covax 150 million doses behind schedule](#), 10 May 2021, accessed 8 December 2021

<sup>54</sup> Gavi, [Gavi signs agreement with Novavax to secure doses \[...\]](#), 6 May 2021, accessed 8 December 2021

<sup>55</sup> The Times of India, [India exports Covid-19 vaccine doses to Myanmar, Nepal, Bangladesh, Iran](#), 10 October 2021, accessed 8 December 2021

<sup>56</sup> BBC News, [Covishield: India vaccine maker halves production](#), 8 December 2021, accessed 6 January 2022

## 2) Underproduction of vaccines?

In March 2021, the World Trade Organization (WTO) estimated that global manufacturing capacity for vaccines needed to [triple from 5 to 15 billion in 2021](#) to ensure sufficient supplies.<sup>57</sup>

In September 2021, the International Federation of Pharmaceutical Manufacturers and Associations (IFPMA) [projected that Covid-19 vaccine production may reach 12 billion by the end of the year](#). This, the Federation argued, meant the focus should now shift away from ramping up production to ensuring the equitable distribution of vaccines.<sup>58</sup>

At the June 2021 summit, the [G7 committed to boost vaccine manufacture](#) in more countries, including low-income ones.<sup>59</sup> In March 2020, the UK Government had provided £250 million to CEPI to accelerate vaccine manufacture.<sup>60</sup>

The African Union has announced agreements to increase manufacturing on the continent.<sup>61</sup> In June 2021, for example, Egypt was [due to start local production](#) of the Chinese Sinovac vaccine.<sup>62</sup>

Equipment needed to administer vaccines may also experience supply shortages: In October 2021, Unicef warned there may be a [global shortage of 2.2 billion auto-disable syringes in 2022](#), threatening vaccination targets.<sup>63</sup>

## 3) Intellectual property rights and vaccines manufacture

A related debate has been whether to waive patents and intellectual property (IP) rights on Covid-19 vaccines. Countries including [South Africa](#), the [US](#), [France](#) and [India](#) have argued this would help boost global manufacturing and allow vaccines to be produced in more countries across the world.<sup>64</sup>

---

<sup>57</sup> Reuters, [New WTO chief calls for tripling of vaccine production](#), 1 March 2021, accessed 8 December 2021

<sup>58</sup> IFPMA, [Momentum of Covid-19 vaccine manufacturing scale up sufficient for step change in distribution](#), 7 September 2021, accessed 8 December 2021

<sup>59</sup> White House, [Carbis Bay G7 summit communique](#), 13 June 2021, para 12, accessed 8 December 2021

<sup>60</sup> Department for International Development, [PM pledges UK aid backing for coronavirus vaccine search](#), 27 March 2020

<sup>61</sup> Devex, [AU launches partnership for Africa vaccine manufacturing](#), 14 April 2021, accessed 8 December 2021

<sup>62</sup> Reuters, [Egypt to start local production of Sinovac vaccine mid-June—minister](#), 7 June 2021

<sup>63</sup> Unicef, [Urgent action needed now to ensure sufficient Covid vaccine syringe supply to meet 2022 vaccination targets](#), 27 October 2021, accessed 10 December 2021

<sup>64</sup> Times of India, [India, South Africa moot 3-year Covid patent waiver](#), 23 May 2021; Gavi, [The US adds its support to patent waivers for Covid-19 vaccines](#), 7 May 2021; Politico, [Macron backs waiving Covid-19 vaccine patents ahead of G7](#), 10 June 2021, all accessed 8 December 2021

WTO [talks are ongoing](#).<sup>65</sup> Both the EU and UK has [opposed the proposal](#), arguing that the global IP system has played a “positive role” and generated effective vaccines and therapeutics.<sup>66</sup> They instead support voluntary licencing and technology transfer agreements for vaccines.<sup>67</sup>

The WTO itself has argued the licencing process should be improved and greater support provided to boost manufacturing capacity.<sup>68</sup>

#### 4) Delays to donations and rollout of booster campaigns

The pace of vaccine donations by high-income countries to Covax and lower income countries has been criticised, including by the [World Bank](#).<sup>69</sup>

In March 2021, the Organisation for Economic Cooperation and Development (OECD) reported that high-income countries, which account for 16% of the global population, had [negotiated supply agreements amounting to around half the world’s supply](#) (note, however, it was uncertain which vaccines would be effective and gain regulatory approval).<sup>70</sup>

The rollout of booster campaigns in many countries, including by the UK, has also [led to fears](#) that countries may become less willing to make further commitments.<sup>71</sup>

In August 2021, the WHO had called for a [two-month moratorium](#) on booster shots.<sup>72</sup> However, in October, an advisory group to the WHO recommended an extra-Covid-19 vaccine to [those who are immunocompromised](#).<sup>73</sup>

In September, the APPG on Coronavirus argued the UK Government [should share doses to vaccinate low-income countries](#) before giving booster jabs to healthy over-50s in the UK. The group backed a booster programme for the vulnerable and immune-suppressed.<sup>74</sup>

---

<sup>65</sup> WTO, [WTO members support maintaining momentum of concessions on common IP Covid-19 response](#), 29 November 2021, accessed 8 December 2021

<sup>66</sup> FCDO and Department for International Trade, [WTO General council November 2021: UK statements](#), 24 November 2021

<sup>67</sup> HL Deb, [9 September 2021](#), c 1048

<sup>68</sup> Reuters, [Vaccine patent waiver will not be enough- WTO chief](#), 20 May 2021, accessed 8 December 2021

<sup>69</sup> Devex, [World Bank head criticises donors for messy Covid-19 vaccine delivery](#), 8 November 2021, accessed 8 December 2021

<sup>70</sup> OECD, [Covid-19 vaccines: Global approaches in a global crisis](#), 18 March 2021, figure 2

<sup>71</sup> DW, [Campaigner’s slam EU countries for slow vaccine sharing as variant sparks panic](#), accessed 8 December 2021

<sup>72</sup> Al-Jazeera, [Citing vaccine inequality, WHO head argues against booster shots](#), 23 August 2021, accessed 8 December 2021

<sup>73</sup> UN, [WHO advisory group recommends extra Covid-19 vaccine dose for immunocompromised](#), 11 October 2021, accessed 8 December 2021

<sup>74</sup> APPG Coronavirus, [Vaccinate low-income countries before giving boosters to healthy \[...\]](#), 17 September 2021, accessed 8 December 2021

In response to criticism in September 2021 that administering booster shots [may undermine the Government's aim to vaccinate the world by the end of 2022](#), the Health Secretary, Sajid Javid, said the Government is implementing the advice of the Joint Committee on Vaccination and Immunisation to administer the programme.<sup>75</sup>

## 5) Affordability of vaccines

Covax is not intended to provide population-wide coverage for eligible countries. This means that in addition to donated vaccines, countries will also need to purchase sufficient vaccines to offer doses to their populations.

The price of vaccines is likely to be a factor in countries' ability to procure vaccines. Prices paid for vaccines are [uncertain](#), but have been reported to be around US\$ 4-37 per dose in the United States for the Oxford-AstraZeneca and Moderna vaccine, respectively.<sup>76</sup>

According to [the BBC and Reuters](#), countries such as Bangladesh paid around US\$ 1.50 more per dose than EU countries to purchase Oxford-AstraZeneca vaccines (averaging US\$ 4 for Bangladesh).<sup>77</sup> Note some of the cost differential is likely to reflect [previous EU investment in vaccine development](#).<sup>78</sup>

Oxford University and its partner AstraZeneca have [pledged not to profit](#) from the programme “during the pandemic,” and for low and middle income countries this pledge will be [“for perpetuity.”](#)<sup>79</sup>

## 4.2

# Challenges to vaccine rollouts

## 1) Disruption due to instability and conflict

Administering vaccines in areas of conflict and instability has also created challenges, given these areas have experienced significant disruptions to their health systems and infrastructure.

---

<sup>75</sup> HC Deb, [14 September 2021](#), c 827

<sup>76</sup> J. Guzman et al in the British Medical Journal, [Covid-19 vaccines pricing policy options for low-income and middle-income countries](#), March 2021, accessed 9 December 2021

<sup>77</sup> Politico, [Poorer countries hit with higher price tag for Oxford/AstraZeneca vaccine](#), 22 February 2021, accessed 9 December 2021

<sup>78</sup> Washington Post, [Europe is paying less than US for many coronavirus vaccines](#), 18 December 2020, accessed 9 December 2021

<sup>79</sup> Oxford University, [Oxford University breakthrough on global Covid-19 vaccine](#), 23 November 2020 and [Oxford University announces landmark partnership with AstraZeneca \[...\]](#), 30 April 2020, both accessed 9 December 2021

In 2020, around 20% of the population of the Middle East and North Africa [lived in close proximity to conflict](#).<sup>80</sup> These areas have seen low vaccination rates:

- **Yemen:** An estimated 2% of the population [are vaccinated](#).<sup>81</sup> In June 2021, while the WHO began vaccinations in [rebel-controlled areas of the country](#), the Houthi rebels continue to [deny the impact of the pandemic](#) in the country, according to Human Rights Watch.<sup>82</sup> The World Bank has said only 50% of the country's health system is [fully functional](#).<sup>83</sup>
- **Syria:** An estimated 12% of the population have [been vaccinated](#).<sup>84</sup> To September, [most vaccines were administered](#) in regime-controlled areas.<sup>85</sup> Health systems have been weakened by ten years of conflict—in October 2021, only 16 of the 33 Covid-19 treatment centres in the northeast of the country [were functioning](#).<sup>86</sup>

While there have been some global ceasefires to support vaccination campaigns, these [have been rarely observed](#).<sup>87</sup>

## 2) Disruption to health systems

Across the world, health care systems have been disrupted by the pandemic, impacting on the ability of core services to be delivered, data to be collected, and vaccines administered.

Health care capacity is important to vaccination rollouts, making it more likely people can be reached and vaccinated. Prior to the pandemic, there were [lower densities of health professionals in Africa and Asia](#) compared to Europe and the Americas, according to WHO data.<sup>88</sup>

For example, in the Asia and the Pacific there were, on average, 2.6 doctors per 1,000 in high-income countries in 2016-2018, [compared to 0.9 in low- and lower-middle income countries](#). A similar pattern was found with nurses: 8.3 per 1,000 in high-income countries, and 1.9 in low and lower-middle income states.<sup>89</sup>

---

<sup>80</sup> World Bank, [One in five people in the Middle East and North Africa now live in close proximity to conflict](#), 23 March 2020, accessed 9 December 2021

<sup>81</sup> Our World in Data, [Coronavirus vaccinations](#), accessed 7 January 2022

<sup>82</sup> Reuters, [WHO to start Covid-19 vaccination in Houthi-run north Yemen](#), 1 June 2021; Human Rights Watch, [Yemen: Houthi risk civilians' health in Covid-19](#), June 2021, both accessed 9 December 2021

<sup>83</sup> World Bank, [Health sector in Yemen—policy note](#), 14 September 2021, accessed 9 December 2021

<sup>84</sup> Our World in Data, [Coronavirus vaccinations](#), accessed 7 January 2022

<sup>85</sup> WHO, [Update on Covid-19 vaccination in Syria](#), 22 September 2021, accessed 9 December 2021

<sup>86</sup> Médecins Sans Frontières, [Worst wave yet of Covid-19 in northern Syrian overwhelms health systems](#), 13 October 2021, accessed 9 December 2021

<sup>87</sup> Global Observatory, [The effects of the Covid-19 pandemic on peace and conflict](#), 23 October 2020, accessed 9 December 2021

<sup>88</sup> WHO, [Health workforce statistics database](#), accessed 9 December 2021

<sup>89</sup> OECD, [Health at a glance: Asia/Pacific 2020: Measuring progress towards universal health coverage](#), 'Doctors and nurses,' November 2020, accessed 9 December 2021

In April 2021, the WHO found that 90% of countries had seen the pandemic [disrupt one or more essential health service](#). Common reasons included work-force related disruption and financial challenges.<sup>90</sup> Facility-based immunisation services were disrupted in 34% of countries to some degree, and routine outreach immunization services were disrupted in 39% (data for January to March 2021, in 187 countries and territories [surveyed](#)).<sup>91</sup>

Covid-related disruption to the health workforce is likely to continue in Africa, where, as of November 2021, only 27% of health workers [were fully vaccinated](#).<sup>92</sup>

### 3) Complex logistics and refrigeration

Poor transport infrastructure and a lack of adequate refrigeration facilities may also hamper the distribution of vaccines.

While the Oxford-AstraZeneca can be stored for [at least six months](#) at normal fridge temperature, the Pfizer and Moderna vaccines are intended to be stored at freezer temperatures.<sup>93</sup> However, during 2021 both [Pfizer](#) and [Moderna](#) said their vaccines can be stored in regular refrigerators for up to one month.<sup>94</sup>

The rollout of vaccines therefore requires a high refrigeration or freezer capacity, which is often [only available in urban areas and hospitals](#).<sup>95</sup> In June 2021, Gavi, the vaccine alliance, said that Pfizer vaccines had [only been distributed to 18 countries via Covax](#) due to restrictions on the time the vaccine could be stored in a refrigerator.<sup>96</sup>

Gavi and Unicef have previously supplied parts of Africa and Asia with refrigeration for vaccines, providing [70,000 facilities since 2017](#).<sup>97</sup>

This has continued in 2021—[Unicef has delivered](#) 350 units of ultra-cold chain systems to 45 countries through Covax support. Recipient countries include

---

<sup>90</sup> WHO, [Covid-19 continues to disrupt essential health services in 90% of countries](#), 23 April 2021, accessed 9 December 2021

<sup>91</sup> WHO, [Tracking continuity of essential health services during the Covid-19 pandemic](#), April 2021, accessed 9 December 2021

<sup>92</sup> WHO, [Only 1 in 4 African health workers fully vaccinated against Covid-19](#), 25 November 2021

<sup>93</sup> AstraZeneca, [AZD1222 vaccine met primary efficiency endpoint in preventing Covid-19](#), 23 November 2020, accessed 9 December 2021

<sup>94</sup> Reuters, [Pfizer Covid-19 vaccine can be stored in refrigerator for a month, US says](#), 20 May 2021; CNBC, [Moderna Covid vaccine can remain stable at refrigerated temperatures for 3 months, company says](#), 20 April 2021, both accessed 9 December 2021

<sup>95</sup> Devex, [Africa CDC outlines ultracold storage strategy for Covid-19 vaccines](#), 21 January 2021, accessed 9 December 2021

<sup>96</sup> Gavi, [Change to cold-store conditions could make Pfizer Covid-19 vaccine more widely available](#), 1 June 2021, accessed 9 December 2021

<sup>97</sup> AP News, [Vaccine storage issues could leave 3B people without access](#), 19 October 2020, accessed 9 December 2021

Bangladesh, Pakistan, Ethiopia, and Nigeria. The largest freezers can store up to 336,000 vaccines each.<sup>98</sup>

Many countries are also [receiving multiple kinds of vaccines](#), complicating their vaccine rollout and making planning more difficult.<sup>99</sup>

#### 4) Lack of data and administrative capacity

Some African countries have had to [destroy or return vaccines](#) as they have not been able to be administered in time. This partly reflects the short date to their expiry and lack of administrative capacity to distribute the doses.<sup>100</sup>

Vaccine wastage, however, is not unexpected—in 2005, the WHO estimated [around half of vaccines are wasted](#) (opens pdf) due to capacity issues and issues in cold-chain storage, among other factors.<sup>101</sup>

Another issue experienced is the need to prioritise vaccines to vulnerable and other priority groups (such as health workers). The WHO has said that many African countries [lack full and correct documentation](#) on people's locations and existing health conditions, making it hard to register and deliver for priority groups.<sup>102</sup>

#### 5) Arranging regulatory approval for vaccines

Some countries have also been slow to approve the vaccines.

An article in the British Medical Journal notes that around 75% of regulators worldwide are unable to perform all core functions “consistently well” and so [depend on other authorities for advice](#).<sup>103</sup> However, countries can use the WHO's emergency use listing (EUL) as a mechanism to [expediate their own approvals process](#).<sup>104</sup>

#### 6) Vaccine hesitancy

Vaccine hesitancy is seen as an issue hindering rollouts in some countries—including by the [World Bank](#)—but it is hard to quantify the extent that this is a significant reason for the lack of take-up in vaccines.<sup>105</sup>

---

<sup>98</sup> Unicef, [The historic push to provide ultra-cold chain freezers around the world](#), 20 September 2021

<sup>99</sup> WHO Africa, [Risks and challenges in Africa's Covid-19 rollout](#), 14 May 2021, accessed 9 December 2021

<sup>100</sup> BBC News, [Covid-19 vaccines: Why some African states can't use their vaccines](#), 8 June 2021

<sup>101</sup> WHO, [Monitoring vaccine wastage at country level](#) (opens pdf), 2005, p44

<sup>102</sup> WHO Africa, [Risks and challenges in Africa's Covid-19 rollout](#), 14 May 2021, accessed 9 December 2021

<sup>103</sup> T. Mak et al in the British Medical Journal, [Global regulatory agility during Covid-19 and other health emergencies](#), April 2020, accessed 9 December 2021

<sup>104</sup> WHO, [WHO issues its first emergency use validation for a Covid-19 vaccine \[...\]](#), 31 December 2021, accessed 9 December 2021

<sup>105</sup> World Bank, [What is driving vaccine hesitancy in Sub-Saharan Africa?](#), 11 August 2021, accessed 9 December 2021

[Social media and low trust](#) in governments are cited by the Bank as reasons for mistrust in the safety of the vaccine, as well as distrust of vaccines developed in Western countries in other parts of the world. The [suspension of the AstraZeneca vaccine](#) for young adults in Europe may have also influenced take up globally.<sup>106</sup>

Based on a literature review published in the British Medical Journal in 2020, it was estimated 64-72% of the global population [would be willing to receive](#) a Covid-19 vaccine.<sup>107</sup> A review of 15 surveys in 10 low- and middle- income countries published in 2021 found around [75-86% were willing to take a vaccine](#), compared to 65% in the US.<sup>108</sup>

To address vaccine hesitancy in Africa, the UK has worked with Wits University, South Africa, as part of its Vaccine confidence campaign.<sup>109</sup>

---

<sup>106</sup> World Bank, [What is driving vaccine hesitancy in Sub-Saharan Africa?](#), 11 August 2021; Pharma News, [European countries suspend use of AstraZeneca's Covid-19 vaccine](#), 8 April 2021, both accessed 9 December 2021

<sup>107</sup> W. Wang et al in British Medical Journal, [Global, regional, and national estimates of target population sizes for Covid-19 vaccination: Descriptive study](#), December 2020, accessed 9 December 2021

<sup>108</sup> J. Solís Acre et al in Nature Medicine, [Covid-19 vaccine acceptance and hesitancy in low- and middle-income countries](#), 27, 2021, accessed 9 December 2021

<sup>109</sup> PQ 94418 [[Coronavirus: Vaccination](#)], 5 January 2022

## 5

# Further reading and data sources

## Vaccine supply and distribution

- Devex, [Will countries reach the 70% vaccination target by mid-2022?](#), December 2021
- Nature, [Omicron is supercharging the Covid vaccine booster debate](#), 2 December 2021
- WHO, [WHO, UN set out steps to meet world Covid vaccination targets](#), October 2021
- World Bank, [Solving the vaccination gaps](#), 22 September 2021
- Nature, [The fight to manufacture Covid vaccines in lower-income countries](#), 16 September 2021
- WHO, [Risks and challenges in Africa's Covid-19 vaccine rollout](#), 14 May 2021
- World Economic Forum, [What does waiving intellectual property rights for Covid-19 vaccines mean?](#), 6 May 2021
- OECD, [Enhancing public trust in Covid-19 vaccination](#), May 2021
- UN, [How can we vaccinate the world? Five challenges facing the UN-backed Covax programme](#), April 2021
- WHO, [Emerging lessons from Africa's Covid-19 vaccine rollout](#), 27 April 2021
- OECD, [Coronavirus vaccines for developing countries: An equal shot at recovery](#), February 2021

## Data on vaccination rates and vaccine donations

Main sources include:

- Our World in Data, [Covid-19 vaccinations](#)
- Unicef, [Covax dashboard](#) (for deliveries and procurement)
- Duke Global Health Innovation Centre, [Vaccine purchases](#)
- Gavi, Our World in Data, IMF, Unicef, World Bank, WTO and WHO, [Covid-19 taskforce](#) (for vaccine donations)

Note these are reliant on publicly available data and may not provide a complete view of vaccines purchased, pledged, or donated.

The House of Commons Library is a research and information service based in the UK Parliament. Our impartial analysis, statistical research and resources help MPs and their staff scrutinise legislation, develop policy, and support constituents.

Our published material is available to everyone on [commonslibrary.parliament.uk](https://commonslibrary.parliament.uk).

Get our latest research delivered straight to your inbox. Subscribe at [commonslibrary.parliament.uk/subscribe](https://commonslibrary.parliament.uk/subscribe) or scan the code below:



 [commonslibrary.parliament.uk](https://commonslibrary.parliament.uk)

 [@commonslibrary](https://twitter.com/commonslibrary)