

# Internet Shutdowns to Prevent Cheating During Exams:

The Impact on Society and Economy in the MENA Region

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## **Executive Summary**

This report analyzes the use of internet shutdowns to combat cheating and to control information leaks during school exams in the Middle East and North Africa (MENA) region. Although it is a regional report, we focus mostly on those countries that have used exam related shutdowns in 2021. The report assesses the effects that these shutdowns have on society, the economy, and the internet overall. Our findings confirm that all internet shutdowns are unjustifiable, harm societies, economies, and the health of the global internet.

This report explains the tools that authorities commonly use to control the internet and outlines a short history of how internet shutdowns have been used during exams in the MENA region. Section 1 explains the importance of internet connectivity for the economy, internet infrastructure, and digital rights. It then details how this practice undermines the Internet Society's Internet Way of Networking (IWN) and impacts the goals and enablers for a healthy internet as set out by the Internet Society.

In section 2 we highlight the practices, policies, and context in each country where an internet shutdown took place during exams in 2021, followed by an impact analysis that focuses on the effect that the shutdown had on the country and its residents. The report concludes by offering recommendations and outlining alternative methods of preventing cheating that are less intrusive.

### **Key findings**

#### Internet shutdowns are never a proportionate response.

• Shutting down the internet to prevent cheating during exams is not the most efficient way to combat such an action. Whatever form a shutdown takes, it harms economic development as well as the integrity of, and trust in, the internet.

 Internet shutdowns do not prevent cheating in exams and there are other more proportionate methods that do not negatively impact entire countries, their economies, and residents.

• The internet is a precursor to a successful digital economy that allows for innovation and three of the four countries analyzed in depth (Algeria, Jordan, and Sudan) are attempting to develop their digital economies while still implementing internet shutdowns, including during exams.

Internet shutdowns harm the aspirations for an open, globally connected, secure, and trustworthy internet and the enablers needed to achieve this.



# Introduction

An internet shutdown occurs when an entity, such as the government or a non-state actor, intentionally disrupts the internet, often to control access to information and disrupt its flow. Shutdowns can target entire networks or specific platforms and services. They can be imposed on a national level or locally to target specific regions, cities, or smaller localized areas. The practice of shutdowns, which are now a "new normal" for many around the world, has been criticized by both internet advocacy organizations and rights groups as they are harmful to societies, economies, and internet infrastructure.<sup>1</sup> In 2021, the internet was shut down by governments 42 times in 19 countries according to data presented on Internet Society Pulse, a platform that tracks and analyses the health, availability and evolution of the internet.<sup>2</sup>

Since the Arab Spring emerged in 2011, many governemnts used internet shutdowns to quell protests. The tactic became a favorite tool in the hands of several governments and occasionally non-state actors seeking to stifle dissent, protests, uprisings, and the reporting and documentation of human rights violations during conflict.

Internet shutdowns have a huge impact on individuals and development. Shutdowns can cut off individuals from vital services and information and decrease standards of living.<sup>3</sup> The use of shutdowns for any reason is a major cause for concern as populations are left vulnerable. Additionally, shutdowns have a clear impact on livelihood. In 2019 alone, internet shutdowns cost the global economy 8 billion dollars USD.<sup>4</sup>

One emerging shutdown trend that has continued to grow over the past few years is the disruption of the internet to prevent cheating during exams. The practice was first documented in Syria and Iraq in 2015 when authorities in the two countries disrupted access to the internet to control exam leaks.<sup>5</sup>

<sup>1</sup> Pulse, "Internet Society Position on Internet Shutdowns," Internet Society, https://pulse.Internetsociety.org/shutdown-statement

<sup>2</sup> Pulse "Internet Shutdowns," Internet Society, https://pulse.Internetsociety.org/shutdowns. 3 Jigsaw, "The Internet Shutdowns Issue," The Current, Jigsaw, https://jigsaw.google.com/the-current/shutdown/. .

<sup>4</sup> Bani Sapra, "Syria's Internet Goes Dark During Exam Season," Wired, 2021, https://wired.me/technology/syrias-Internet-goes-dark-during-exam-season/.

<sup>5</sup> Ali Sibai, "#NoExamShutdown: 4 MENA Countries Shut Down Internet so far "to Fight Cheating"" 2020, SMEX, https://smex.org/noexamshutdown-4-mena-countries-shut-down-the-Internet-so-far-to-fight-cheating/.

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## Methodology

The Internet Society's Internet Impact Assessment Toolkit was used to frame this report. The toolkit provides a framework for the analysis of proposed changes in policies, legislation, technologies, applications, business models, and regulations, both at a foundational level (what the Internet Society calls the "Internet Way of Networking") and as part of a shared vision of a thriving internet (what the Internet Society calls the "Internet goals").

The Internet Way of Networking describes key features of the networking model that is the internet (what makes the internet the interconnection of networks it is). The "Internet goals" refer to shared aspirations for the internet to keep thriving, meaning a network that is open, globally connected, secure, and trustworthy.<sup>10</sup> These goals are enabled by a series of supporting characteristics identified by the Internet Society ("enablers"). A secure internet, for example, is enabled by data confidentiality for information, devices, and applications and integrity of information, applications, and services.

We began by explaining how shutdowns in general undermine the Internet Way of Networking and the enablers of an open, globally connected, secure, and trustworthy internet, and, as a result, the opportunities for economic development, growth, and innovation that the internet presents. We then evaluated the tactic of using internet shutdowns during exams against the goals and enablers of an open internet and analyzed the effect on them.<sup>11</sup> This same method of evaluating and analyzing was then followed when looking at the impact on society in the countries the report focuses on. Each country profile begins with an explanation of how exam shutdowns are used, followed by background information on the country's overall internet policies. Finally, an analysis of the impacts on society, the economy, and the overall internet.

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<sup>11 &</sup>quot;Enablers of an Open, Globally Connected, Secure and Trustworthy Internet," The Internet Society, 2021, https://www.Internetsociety.org/resources/doc/2021/en-



<sup>6</sup> Tunisia previously resorted to localized shutdowns limited to a few blocks from examination sites. 7 Kaveh Waddell, "Iraq Shut Down its Internet to Prevent Sixth-Graders from Cheating", 2016 The Atlantic, https://www.theatlantic.com/technology/ar-

chive/2016/05/iraq-shut-down-its-Internet-to-prevent-sixth-graders-from-cheating/482946/ 8 Jigsaw, "The Internet Shutdowns Issue," The Current, Jigsaw, https://jigsaw.google.com/the-current/shutdown/.

<sup>9 &</sup>quot;What is Jamming," IGI Global, https://www.igi-global.com/dictionary/security-issues-networks/15947#:~:text=Jamming%20is%20a%20simple%2C%20yet,devices%20being%20unable%20to%2 0transmit

<sup>10</sup> How to Conduct an Internet Impact Brief," The Internet Society, 2021, https://www.Internetsociety.org/resources/doc/2021/how-to-conduct-an-Internet-impact-brief/.

# Internet Connectivity: An Enabler of Economic Development and Innovation

The internet cannot be divided from the "physical world". It is embedded within our physical reality and loss of the internet, even for short periods of time, has huge consequences for individuals.<sup>12</sup>

Internet connectivity is an enabler of innovation, economic development, and growth, and is a prerequisite for a successful digital economy. In 2016, the digital economy was worth 15.5% of the global GDP. This is expected to rise to 24.3% by 2025.<sup>13</sup>

It is estimated that over 70% of new value added to the economy in the next decade will be done on digitally enabled platforms.<sup>14</sup> Continuous internet access is becoming as necessary as stable electricity since uninterrupted connectivity is now considered essential for business.

As highlighted on the Internet Society Pulse platform, a country's economic development has been linked to the availability of broadband services. Unreliable internet leads to less economic activity, which leads to less profit, less tax revenue and lower GDP. Internet shutdowns create instability and that discourages investment and growth in countries and regions where they occur, which in turn reduces long term investment as investors and businesses rely on stable connections. If a government is willing to shut down access to the internet, this may give a signal that it does not prioritize the digital economy, and harms individuals by preventing them from participating and reaping the benefits from it.<sup>16</sup>

Internet shutdowns are also a violation of internationally recognized rights, and this has been reaffirmed numerous times by the UN and rights groups as people's online rights must be respected in the same way as their offline rights.<sup>17</sup>

<sup>17</sup> UN Human Rights Council 2020, "Freedom of Expression" 44th Session https://undocs.org/en/A/HRC/44/L.18/Rev.1.



<sup>12</sup> Anne-Marie Grey, "The Case for Connectivity, the New Human Right," UN Chronicle, 2020, https://w-ww.un.org/en/un-chronicle/case-connectivity-new-human-right.

<sup>13</sup> United Nations Conference on Trade and Development, 2021, "Digital Economy Report 2021," https://unctad.org/system/files/official-document/der2021\_en.pdf.

<sup>14</sup> World Economic Forum, "Shaping the Future of Digital Economy and New Value Creation," https://www.weforum.org/platforms/shaping-the-future-of-digital-economy-and-new-value-creation.

<sup>15</sup> Pulse, "Internet Society Position on Internet Shutdowns," https://pulse.Internetsociety.org/shutdown-statement.
16 ibid.

They are also a violation of the right to freedom of expression and information, guaranteed by Article 19 of the International Covenant on Civil and Political rights (ICCPR).

Nevertheless, we acknowledge that the problem of cheating in exams undermines trust in the overall educational system of a country and is of great concern to authorities. We believe, however, that other solutions can be used aside from shutting down the internet. Cheating on exams is ethically inappropriate and undermines trust in the system but shutting down the internet to prevent it happening is more harmful than the cheating itself.

This is because, on many occasions, shutting down the internet to combat cheating means that an entire country's internet is disrupted for several days, and it is this that is disproportionate. In addition, it might normalize internet shutdowns being used for other arbitrary reasons. This contradicts the need that most MENA countries have right now, which is the urgent need to transform their traditional economies into digital ones. For this, the internet is an important part of people's daily lives and needs to be continually available.

## How Shutdowns Undermine the "Internet Way of Networking"

All the benefits that the internet has brought about are thanks to its critical properties. According to Internet Society: "Specific technologies and business models may come and go, but the Internet Way of Networking has been a constant foundation for the success of the internet from the beginning. For the internet of the future to be as innovative and sustainable as it has been so far, the critical properties need to guide its evolution." It identified five properties that "form the underlying foundation the Internet needs to work for everyone":

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<sup>18</sup> The Internet Society, 2020, "The Internet Way of Networking: Defining the Critical Properties of the Internet," https://www.internetsociety.org/resources/doc/2020/inter-net-impact-assessment-toolkit/critical-properties-of-the-internet/.



1.	An Accessible Infrastructure with a Common Protocol that is open and has low barriers to entry.
2.	Open Architecture of Interoperable and Reusable Building Blocks based on open standards development processes voluntarily adopted by a user community.
3.	Decentralized Management and a Single Distributed Routing System which is scalable and agile.
4.	Common Global Identifiers which are unambiguous and universal.
5.	A Technology Neutral, General-Purpose Network which is simple and adaptable.

Each of these properties bring benefits to anyone who uses, builds, develops, and operates various components of the internet ecosystem. You can read more about these benefits on the Internet Society website.

For the purpose of this research, we will only focus on properties 1) and 3), which are more relevant to internet shutdowns: Internet shutdowns undermine the benefits brought about by accessible infrastructure and decentralized nature of the internet.

Distributed routing delivers a resilient and adaptable network of autonomous networks, allowing for local optimizations while maintaining worldwide connectivity.



The distributed routing system delivers key benefits of global reach, resilience, and optimized connectivity. All these are undermined by shutdowns, which make it more difficult to route traffic. "The result is a less resilient network, as a shutdown compromises the ability of network operators to respond to changing local conditions, such as the surge in traffic seen during the current pandemic."<sup>19</sup>

In fact, shutdowns are much easier to implement in countries where the government has strong control over telecommunication companies, internet infrastructure, and Internet Service Providers (ISPs). An Internet infrastructure that is not as centralized protects the internet from government decrees. For example, it would be much harder to order a shutdown in the USA where there are thousands of ISPs. The internet is granted protection just by the sheer number of providers.<sup>20</sup>

### How Shutdowns Undermine the Enablers of an Open, Globally Connected, Secure, and Trustworthy Internet

As part of the Internet Way of Networking framework, the Internet Society lays out the main goals of a healthy internet: an open, globally connected, secure, and trustworthy one. These are outlined below. To achieve these four goals, several enablers have been identified that can help advance each goal. Striving for these goals allows for a more secure and trustworthy internet that benefits all. Yet, governments often threaten the health and development of the internet in their own countries, including through the practice of internet shutdowns. The practice of shutting down access to the internet during exams is a prime example of governments harming the internet by impeding the enablers of an open, globally connected, trustworthy, and secure internet.

<sup>21 &</sup>quot;The Internet Impact Assessment Toolkit- Introduction," The Internet Society, 2021, https://www.Internetsociety.org/wp-content/uploads/2021/11/Introduction-IIAT\_EN.pdf.



<sup>19</sup> Akriti Bopanna, Internet Society, 2021, "https://www.internetsociety.org/blog/2021/02/internet-shutdowns-how-to-undermine-trust-in-the-network-of-networks/. Error! Hyperlink reference not valid. 20 Jigsaw, "The Internet Shutdowns Issue," The Current, Jigsaw, https://jigsaw.google.com/the-current/shutdown/.

Goal	Enabler
An Open Internet that allows everyone to participate with a	Easy and unrestricted access
minimum of barriers, to use it, to innovate, and to grow and	Unrestricted use and deployment of internet technologies
sustain the Internet as a force for good.	Collaborative development, management, and governance
A Globally Connected Internet that is inclusive, allowing every-	Unrestricted reachability
geographical restrictions and use the full power of the network.	Available capacity
A Secure Internet that survives attacks, that supports everyone in maintaining integrity and confidentiality of the data. A	Data confidentiality of information, devices, and applications
Secure Internet also means that its use does not create insecurity, such as botnets that are used in phishing scams.	Integrity of information, applications, and services
A Trustworthy Internet that people can depend on to be there, so that the internet can be a base for worldwide services, everything from	Reliability, resilience, and availability
	Accountability
recreation to commerce to information.	Privacy
Table 1: Internet goals and enablers.	

Citizens of countries that carry out internet shutdowns cannot count on the

reliability of their connection, nor can they trust those operating the internet as it can be shut down for any reason at any time. The enablers of reliability, availability, and accountability are all sacrificed.



This tactic makes it difficult to rely on being able to connect to the internet especially when little notice of a shutdown is given, which is often the case. Further, it makes it difficult to depend on the internet if it can be periodically shut down, including during exams. The internet also becomes less accountable as decisions to shut it down are often non-transparent or are in contravention with local law.

Shutdowns negatively impact a globally connected internet as it takes people off the internet for hours, days or even weeks and months at a time and limits the ability for economic growth. It also affects the openness of the internet as it renders it inaccessible and creates a barrier to internet access for the duration of the shutdown. The intensity of the impact of this depends on how the country uses shutdowns, whether they are localized or not and how long they last.<sup>22</sup> However, even a very localized shutdown is still harmful to the internet and having a period of a few days or weeks where the internet is periodically shut down weakens its reliability. This practice can hinder development in countries that use them, making it difficult for a country to grow digitally and benefit from technological advancements. For example, Algeria is developing a national digitization policy according to its Minister of Digitization and Statistics.<sup>23</sup> These strategies need reliable connectivity and a trustworthy internet, but with regular shutdowns throughout the country, reliability is difficult to achieve. These digital transformations cannot be meaningful without first protecting the internet. internet shutdowns are a clear violation of the internet enablers, and the use of shutdowns harms people's ability to rely on the internet, impeding its development and overall health.

The table below summarizes how enablers of internet goals are impacted by internet shutdowns.

ablers-of-open-globally-connected-secure-trustworthy-Internet/.

<sup>23 &</sup>quot;A National Digitization Policy Under Development," Algeria Invest, 2021, https://algeriainvest.com/news/a-national-digitization-policy-under-development; "Harnessing Technology for Jordan's Future Digital Economy," Digital Transformation Jordan, 2022, https://digitaltransformationjordan.com/; "Sudan Embraces Digital Payments to Build a More Inclusive Economy," Better than Cash Alliance, 2020, https://www.betterthancash.org/news/sudan-embraces-digital-payments-to-build-a-more-inclusive-economy.



<sup>22 &</sup>quot;Enablers of an Open, Globally Connected, Secure and Trustworthy Internet," Internet Society, 2021, https://www.Internetsociety.org/resources/doc/2021/en-

Goal	Enabler affected by the shutdown			
	Easy and unrestricted access: shutdowns make it hard or impossible to use and access the internet.			
An Open Internet	Unrestricted use and deployment of internet technologies: Unrestricted access and common protocols deliver global connectivity and encourage the network to grow. When shutdowns occur, they disrupt unrestricted access and prevent people from connecting to and benefiting from the opportunities that the internet offers. The development of new products and services also becomes hindered.			
	Collaborative development, management, and governance: Shutdowns prevent the optimization of internet infrastructure and services to allow for open collaboration to benefit users.			
A Globally	Unrestricted reachability: internet users lack access to resources and services made available on the internet, and face challenges making resources available them- selves due to shutdowns.			
Connected Internet	Available capacity: shutdowns diminish the capacity of the internet, and as a result there isn't enough connection or there is no connection at all to meet user demand.			
A Secure Internet	Data confidentiality of information, devices, and applications: because all dependencies, even of critical services, are hard to see, a shutdown in one country can cut off some of these dependencies and affect services in other countries, including services used for authentication, authorization and access. This affects security of the internet for people even outside the country that is being shut down.			
A Trustworthy Internet	Reliability, resilience, and availability: shutdowns make the internet unreliable and unavailable to users. It also lacks resilience as it cannot maintain an acceptable level of service. This in turn reduces trust in the internet itself. Shutdowns prevent users from accessing and using tools, applications, and services such as encrypted communication apps and VPNs that allow them to send and exchange information securely on the internet.			
	Accountability: shutdowns are ordered and imposed by entities acting in an unfair and non-transparent way, and they are rarely held accountable for such actions.			
	Privacy: shutdowns targeting tools and services that allow users to act anonymously or pseudonymously diminish privacy.			
Table 2: How shutdowns affect enablers of Internet goals.				



## The Costly Impacts of Exam-related Shutdowns in Algeria, Jordan, Sudan, and Syria

This section highlights the impact of internet shutdowns during exams on society, the economy, and the global internet infrastructure while also demonstrating that they are ineffective at preventing cheating and information leaks. We first provide a quick summary of the situation in each of our focus countries before analyzing the impact.

## Overview of Exam Shutdowns in Algeria, Jordan, Sudan, and Syria

### Algeria

Algeria began the practice of exam-related internet shutdowns in 2016, after half a million students had to retake their national baccalaureate exam due to exam questions being leaked.<sup>24</sup> Prior to 2016, authorities resorted to blocking social media websites during the exam period, however, in response to the leaks they opted for a full shutdown. This decision was made jointly by the Ministers of Telecommunication and Education. Algeria invested in jamming technologies, surveillance cameras, and metal detectors in exam halls, but the Minister of Education argued that these were insufficient due to how guickly exam materials can be leaked online.<sup>25</sup> In 2020, authorities shut down access to the internet from September 13-17 from 7:30 a.m. until 6 p.m. without any forewarning.<sup>26</sup> Interestingly enough, the Algerian president denounced exam-related internet shutdowns saying that "a country heading towards" digital economy, e-commerce, and e-payment cannot make good progress without strong and efficient internet bandwidth."<sup>27</sup> However, this practice has continued into 2021 with the government alternating between full shutdowns and heavy throttling for four days during the exam period. During the 2021 exam period, the internet was fully inaccessible from 8 a.m. until 12 p.m. and 2:30 p.m. until 5 p.m., with throttling in between these sessions and until the next day until after 5pm. Some days the Internet was inaccessible until 6 p.m., This lasted from June 20-24.28

gerie-se-dirige-vers-l-economie-numerique-je-serai-intransigeant-par-rapport-aux-coupures-d-internet 28 Ali Sibai on Twitter, "Internet Disruption Alert," https://twitter.com/alisibai/status/1407017281922682901.



<sup>24</sup> Jon Henley, "Algeria Blocks Internet to Prevent Students Cheating During Exams," The Guardian, 2018, https://www.theguardian.com/world/2018/jun/21/algeria-shuts-Internet-prevent-cheating-school-exams.

<sup>25</sup> Marwa Fatafta, Kassem Mnejja and Felicia Anthonio, "Internet Shutdowns during Exams: when MENA Governments Fail the Test," Access Now 2021, https://www.accessnow.org/mena-Internet-shutdowns-during-exams/..

<sup>26</sup> Emna Sayadi and Dima Samaro, Access Now, 2020, "Internet shutdowns in Algeria and Sudan: damaging practices during exceptional circumstances," https://www.accessnow.org/internet-shutdowns-in-algeria-and-sudan-damaging-practices-during-exceptional-circumstances/.

<sup>27 &</sup>quot;Coupures d'internet : le Président Tebboune affirme qu'il sera "intransigeant", "aps.dz, 2020, https://www.aps.dz/economie/109946-president-tebboune-l-al-

Algerians were subject to the most Internet shutdowns in North Africa in 2019, with a total of six shutdowns reported.<sup>29</sup> The control the Algerian authorities exercise over the internet and its infrastructure make these shutdowns easier to implement. There are three main telecommunication providers, with the most prevalent one, Algerie Telecom, being state owned.<sup>30</sup> Algerie Telecom also has a monopoly over fiber optic networks and has power over developing the infrastructure in general.<sup>31</sup> Private ISPs are obliged to follow these orders from the telecommunications minister as per the operator's contract.<sup>32</sup>

#### Jordan

In 2015, Jordan began blocking messaging apps on the days when national secondary school exams were held.<sup>33</sup> This practice continued in 2020 with messaging apps such as WhatsApp, Messenger, and Telegram being blocked from 10 a.m. to 2 p.m. from July 1 - July 23.<sup>34</sup> In 2021, this same method was applied from June 24-July 15 but only in the vicinity of the examination hall, although the Telecommunication Regulatory Commission (TRC) warned it may affect areas beyond that.<sup>35</sup> This communication app blocking was coordinated by the TRC in coordination with the Ministry of Education. Subscribers of Zain Internet, one of the largest telecommunication operators in Jordan, further reported a total loss in internet connectivity on June 25 around 10:20 a.m., which slowly returned about an hour later but continued to have speed issues.<sup>36</sup> Some alternatives to app blocking have been explored: in 2016, the Ministry of Education installed costly jammers into public high school examination halls.

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<sup>36</sup> Zoe Sottile, "Zain Internet Shutdown Disrupts Students Exams," Jordan News, 2021 https://www.jordannews.jo/Section-109/News/Zain-Internet-shutdown-disrupts-students-exams-3333.



<sup>29</sup> Emna Sayadi and Dima Samaro, "Internet Shutdowns in Algeria and Sudan: damaging practices during exceptional circumstances," Access Now, 2020 https://www.accessnow.org/Internet-shut-downs-in-algeria-and-sudan-damaging-practices-during-exceptional-circumstances/..

<sup>30</sup> International Trade Administration, "Algeria Country Commercial Guide," 2021 https://www.trade.gov/country-commercial-guides/algeria-information-communications-technologies.. 31 Ibid.

<sup>32</sup> Jon Henley, "Algeria Blocks Internet to Prevent Students Cheating During Exams," The Guardian, 2018, https://www.theguardian.com/world/2018/jun/21/alge-

<sup>33</sup> Freedom House, "Jordan Freedom on the Net 2020," 2020, https://freedomhouse.org/country/jordan/freedom-net/2020.

<sup>34</sup> Ali Sibai '' "NoExamShutdown: 4 MENA Countries Shut Down Internet so far "to Fight Cheating," SMEX, 2020,, https://smex.org/noexamshutdown-4-mena-coun-

tries-shut-down-the-Internet-so-far-to-fight-cheating/.

<sup>35</sup> Marwa Fatafta, Kassem Mnejja and Felicia Anthonio, "Internet Shutdowns during Exams: when MENA Governments Fail the Test," Access Now 2021, https://www.accessnow.org/mena-Internet-shut-downs-during-exams/.

They were never used as they needed specialist technicians to activate them and were known to be harmful to those with some cardiovascular issues.<sup>37</sup> However, this alternative would have still involved disrupting the internet when other measures such as increasing security at examination halls could be effective at preventing cheating.

Although Jordan has a competitive ISP market that is not all state owned, the government exercises some control over these providers and the internet infrastructure in general, making it easier for it to control the internet.<sup>38</sup> The TRC regulates ISPs and does not always operate independently and is accountable to the Ministry of Digital Economy and Entrepreneurship (MoDEE).<sup>39</sup> According to Jordanian Open Source Association (JOSA), the TRC ordering telecommunication companies to disrupt messaging works outside the boundaries of Jordanian law as a decision such as this must be made by a judicial authority or public prosecutor since "there is no legal provision allowing the Ministry of Education to address the Telecommunications Commission in order to block sites."<sup>40</sup> In a statement, TRC said it took the blocking decision "in coordination" with the Ministry of Education.<sup>41</sup>

#### Sudan

Sudan has implemented internet shutdowns since 2020 with the purpose of preventing exam cheating as ordered by the public prosecutor at the request of the Ministries of Education and Interior.<sup>42</sup> In 2021, the exam period ran from June 19-30. Shutdowns were reported in June in conjunction with these exams. The measure was announced by the Ministry of Education and lasted from 8 a.m. until 11 a.m.<sup>43</sup>

41 Ibid.

<sup>43 &</sup>quot;Sudan's Exam-Related Internet Shutdowns." Cloudfare, 2021, https://blog.cloudflare.com/sudans-exam-related-Internet-shutdowns/.



<sup>37</sup> Zoe Sottile, "Zain Internet Shutdown Disrupts Students Exams," Jordan News, 2021 https://www.jordannews.jo/Section-109/News/Zain-Internet-shutdown-disrupts-students-exams-3333.
38 Freedom House, "Jordan Freedom on the Net 2020," 2020 https://freedomhouse.org/country/jor-dan/freedom-net/2020.

<sup>39</sup> Ibid.

<sup>40</sup> Sawsan Abo Alsondos, "Jordan: Another Excuse for Controlling the Internet," SMEX, 2021, https://s-mex.org/jordan-another-excuse-for-controlling-the-Internet/.

<sup>42</sup> Mohamed Ali, ''To prevent exam cheating..one Arab country shuts down the Internet for three hours per day,'' Sky News Arabia, 2021, https://www.skynewsarabia.com/amp/variet-

ies/1445260-%D9%84%D9%85%D9%86%D8%B9-%D8%BA%D8%B4-%D8%A7%D9%84%D8%A7%D9%8 5%D8%AA%D8%AD%D8%A7%D9%86%D8%A7%D8%AA-%D8%AF%D9%88%D9%84%D8%A9-%D8%B9 %D8%B1%D8%A8%D9%8A%D8%A9-%D8%AA%D8%AD%D8%AC%D8%A8-%D8%A7%D9%84%D8%A7% D9%95%D9%86%D8%AA%D8%B1%D9%86%D8%AA-3-%D8%B3%D8%A7%D8%B9%D8%A7%D8%AA-% D9%8A%D9%88%D9%85%D9%8A%D8%A7.

These shutdowns usually occur with little notice. For example, Zain Sudan notified its subscribers of the exam shutdown in 2020 via SMS on the day the shutdown began.<sup>44</sup> The shutdowns have been criticized by various groups and there have been attempts to end the practice. For example, in response to the 2020 exam shutdown, a complaint was filed against telecommunication operators by the Consumer Protection Association.45

The Sudanese government exercises strong control over the internet, with frequent shutdowns or weakened connectivity in response to protests.<sup>46</sup> There are four major telecom providers, three of which have some links to the government.<sup>47</sup> 70 percent of usage comes from the capital Khartoum<sup>48</sup> and less than 1 percent of the population had a fixed broadband subscription connection as of 2018, hence most connectivity occurs via mobile connection.<sup>49</sup> These conditions make it easier for authorities to exercise significant control over the internet.

The shutdowns run counter to the Sudanese constitution which guarantees every citizen's right under article 57 to "access the Internet without prejudice to public order, safety, and morals in accordance with what is determined by law."<sup>50</sup> Sudan also ratified the ICCPR and therefore is in violation of it.<sup>51</sup>

#### Syria

Syria has witnessed regular shutdowns during national high school exams, with incidences being reported since 2015.<sup>52</sup>

tries-shut-down-the-Internet-so-far-to-fight-cheating/.

<sup>52</sup> Ali Sibai, "Another Internet Blackout in Syria During Exams," SMEX 2021, https://smex.org/another-Internet-blackout-in-syria-during-exams/.



<sup>44</sup> Ali Sibai ""NoExamShutdown: 4 MENA Countries Shut Down Internet so far "to Fight Cheating," SMEX, 2020,, https://smex.org/noexamshutdown-4-mena-coun-

<sup>45</sup> SMEX, "Military-Controlled Telecom Sector and Internet Shutdowns in Sudan." 2020, https://smex.org/military-controlled-telecom-sector-and-Internet-shutdowns-in-sudan/.

<sup>56</sup> Internet Society Pulse, https://pulse.internetsociety.org/shutdowns/shutdown-116.

<sup>47</sup> SMEX, "Military-Controlled Telecom Sector and Internet Shutdowns in Sudan." 2020, https://smex-.org/military-controlled-telecom-sector-and-Internet-shutdowns-in-sudan/.

<sup>48</sup> Freedom House, "Sudan Freedom on the Net 2021," https://freedomhouse.org/country/sudan/freedom-net/2021.

<sup>49</sup> Ibid.

<sup>50</sup> Constitution Project, "Sudan's Constitution of 2019," ttps://www.constituteproject.org/constitution/-Sudan\_2019.pdf?-

lang=en#:~:text=The%20Constitutional%20Charter%20is%20the,required%20to%20remove%20such% 20inconsistency.https://www.constituteproject.org/constitution/Sudan\_2019.pdf?lang=en#:~:text=The %20Constitutional%20Charter%20is%20the,required%20to%20remove%20such%20inconsistency.

<sup>51</sup> UN Treaty Database "Ratification Status for Sudan," https://tblnternet.ohchr.org/\_layouts/15/Treaty-BodyExternal/Treaty.aspx?CountryID=165&Lang=EN.

In 2021, Syrian residents faced internet shutdowns that lasted four and a half hours a day. Residents were notified of this shutdown by the state-owned telecom provider which informed customers that this shutdown will run from May 31 until June 22 and that the outages could extend an additional two hours per day.<sup>53</sup> This was coordinated by the Ministry of Education and the Ministry of Telecommunications. The Ministry of Education also announced that it was trialing new methods, including the use of surveillance cameras and encrypting the distribution of exam questions<sup>54</sup> to prevent cheating.<sup>55</sup>

Syrian citizens have faced internet shutdowns to some degree and for various reasons since 2011.<sup>56</sup> Internet access is already difficult in Syria due to the government's full control over the internet and the ongoing military conflict. In government-controlled areas, the main ISP is the Syrian Telecommunication Establishment (STE). Private ISPs must sign a "memorandum of understanding to connect to the international Internet via gateways controlled by the Syrian government."<sup>57</sup> In 2020, one of the major ISPs, MTN, announced its plans to exit the Syrian market due to a "difficult operating environment."<sup>58</sup> The Syrian government also announced an internet rationing scheme in the same year to place data thresholds on ADSL connections.<sup>59</sup>

## Analysis

Internet shutdowns during exams are extremely costly to the economy and harmful to the global internet infrastructure and society.

Shutdowns during exams in Algeria, Sudan and Syria are not localized to a specific area and thus disproportionately affect everyone in these countries.

<sup>59</sup> Marwa Fatafta, Kassem Mnejja and Felicia Anthonio, "Internet Shutdowns during Exams: when MENA Governments Fail the Test," Access Now 2021, https://www.accessnow.org/mena-Internet-shut-downs-during-exams/.



<sup>53</sup> Bani Sapra, "Syria's Internet Goes Dark During Exam Season," Wired 202, https://wired.me/technolo-gy/syrias-Internet-goes-dark-during-exam-season/.

<sup>54 &</sup>quot;Ministry of Education: For the first time, questions to be encrypted and surveillance cameras during this year's examinations," [Arabic], Enab Baladi, 2021, "https://www.enabbaladi.net/ar-chives/480497.

<sup>55</sup> Marwa Fatafta, Kassem Mnejja and Felicia Anthonio, "Internet Shutdowns during Exams: when MENA Governments Fail the Test," Access Now 2021, https://www.accessnow.org/mena-Internet-shut-downs-during-exams/.

<sup>56</sup> Freedom house, "Syria Freedom on the Net 2020", 2020, https://freedomhouse.org/country/syria/-freedom-net/2020..

<sup>57</sup> Ibid.

<sup>58</sup> Sebastien De Rosbo,, "Syria Telecoms Market Report," Budde Comm, 2021, https://www.budde.com.au/Research/Syria-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses.

In Algeria, the 2020 exam related shutdown was estimated to cost the economy nearly 388 million USD.<sup>60</sup> Experts have estimated that per hour of disrupted internet, the shutdown costs 500 million Algerian dinars.<sup>61</sup>

In Sudan, shutdowns cost the economy approximately 5.7 million dollars a day.<sup>62</sup> They harm the public and private sector by making it impossible to conduct services or communicate online. In a 2021 SMEX article, the founder of an app that connects patients to nearby hospitals, Mohammad Abdallah, explained that these shutdowns were particularly harmful as most requests for ambulances happen in the morning. With internet services disrupted, people could only access the service via phone which led to longer waiting periods and a 20 percent loss of customers who were unable to get through to the company and order an ambulance,<sup>63</sup> not to mention the fact that citizens could not access crucial health services. The shutdowns also affected universities and those students studying online due to COVID-19. Other sectors have been financially impacted, and the shutdowns add another layer of difficulty to accessing the internet in a country with regular electricity rationing and power cuts.

The length of time the internet is cut during exam-related shutdowns is inordinately disruptive to daily life. These shutdowns are wholly disproportionate due to their lack of specificity and necessity as other measures could help combat exam cheating.

The Algerian tactic is even more disturbing as past shutdowns lasted for over eleven hours at a time. Such a significant disruption means Algerians are practically barred from the internet until exams are over, making it impossible to communicate online, access online services, or conduct any online business, which leads to loss of income and restricts access to information.

<sup>63</sup> Jon Henley, "Algeria Blocks Internet to Prevent Students Cheating During Exams," The Guardian, 2018, https://www.theguardian.com/world/2018/jun/21/alge-ria-shuts-Internet-prevent-cheating-school-exams..



<sup>60</sup> Digwatch, "Internet Restrictions during Exam in Algeria Cost nearly US \$388 Million," 2020. https://dig.watch/updates/Internet-restriction-during-exam-algeria-cost-nearly-us388-million.
61 Marwa Fatafta, Kassem Mnejja and Felicia Anthonio, "Internet Shutdowns during Exams: when MENA Governments Fail the Test," Access Now 2021, https://www.accessnow.org/mena-Internet-shutdowns-during-exams/.

<sup>62</sup> SMEX, "Military-Controlled Telecom Sector and Internet Shutdowns in Sudan." 2020, https://smex-.org/military-controlled-telecom-sector-and-Internet-shutdowns-in-sudan/.

Mohammed Gamil, "No Internet Shutdown Can Cure Corruption" SMEX, 2021, https://smex.org/sudan-no-Internet-shutdown-can-cure-corruption-opinion/.

These shutdowns have been criticized by technology specialists and educators alike, with some pointing out that the issue of information leaking is the responsibility of the Ministry of Education and does not require such extreme measures that affect the entire country's ability to function.<sup>64</sup>

But, even when shutdowns are localized or do not last long, they are still disruptive to society, the economy, and the development of the internet. This is the case for Jordan, which blocked messaging apps in and around schools where the exams were taking place for three weeks in 2021. However, the impact of the disruption was not only limited to a specific area as companies and banks reported interrupted service. Vital services such as the COVID-19 vaccine rollout were affected. Poor internet led to slower services and large crowds at vaccination centers, where workers were unable to access registration data.<sup>65</sup> Jordan has a very high internet penetration rate of 89 percent and therefore a greater reliance on the internet, making it counterproductive to disrupt lives and the economy in this way.

The table below provides a quick summary of the impact that exam-related shutdowns have on the internet in each country highlighted in this report.

	2021 style of shutdown	Impact on Internet
Algeria	Shutdown and throt- tling for four days during exam period.	People unable to go online, affecting easy and unrestricted access and use of technologies. Reliability and resil- ience weakened. No response to complaints, weakening accountability and trustworthiness overall.
Jordan	Blocking of messag- ing apps in schools where the exams were taking place for three weeks. Reported Internet outages and throt- tling for subscribers of the telecom opera- tor Zain.	People unable to access communica- tion apps, affecting easy and unre- stricted access and unrestricted use of technologies. Dead zones created, affecting unrestricted reachability and available capacity Significant impact on reliability and resilience due to inability to trust the internet and its providers. <sup>66</sup>

<sup>64</sup> Jon Henley, "Algeria Blocks Internet to Prevent Students Cheating During Exams," The Guardian, 2018, https://www.theguardian.com/world/2018/jun/21/alge-

ria-shuts-Internet-prevent-cheating-school-exams..

<sup>65</sup> Sawsan Abo Alsondos, "Jordan: Another Excuse for Controlling the Internet," SMEX, 2021, https://smex.org/jordan-another-excuse-for-controlling-the-Internet/. 66. Ibid



Sudan	Full shutdown for four hours a day during the 11-day exam period.	People unable to go online, affecting easy and unrestricted access and unrestricted use of technologies. Reliability and resilience weakened. Acting in contravention with the Sudanese constitution, which enshrines the right to access the internet," impacting accountability and overall trustworthiness of the internet. <sup>67</sup>
Syria	Full shutdown for four and a half hours a day for three weeks.	People unable to go online, affecting easy and unrestricted access and unrestricted use of technologies. Reliability and resilience weakened, causing a lack of trust. Unrestricted reachability and available capacity and enablers for a globally connected internet undermined.

Table 3: How exam-related shutdowns in Algeria, Jordan, Sudan, and Syria affect the enablers of Internet Society's IWN goals.

In Syria, in 2021, the exam shutdown occurred before the start of the working day, but this excluded those who work irregular hours or have 24-hour online enterprises and so still disproportionately affected the population. And, while the internet has proven to be even more vital during the COVID-19 pandemic and lockdowns, Syria struggled with the pandemic and internet outages further hindered people's ability to navigate health resources.<sup>68</sup>

In Syria and other countries and areas going through conflict, keeping the internet on and functioning properly is particularly vital for residents. It is important for monitoring violations and allows them to connect with their families abroad.<sup>69</sup> In the past, Syria has often used internet outages

<sup>69 &#</sup>x27;'Syrian Refugee Crisis Explained,'' UNHCR, 2021, https://www.unrefugees.org/news/syria-refugee-crisis-explained/.



<sup>67.</sup> Constitution Project, "Sudan's Constitution of 2019," ttps://www.constituteproject.org/constitution/-Sudan\_2019.pdf?-

lang=en#:~:text=The%20Constitutional%20Charter%20is%20the,required%20to%20remove%20such% 20inconsistency.https://www.constituteproject.org/constitution/Sudan\_2019.pdf?lang=en#:~:text=The %20Constitutional%20Charter%20is%20the,required%20to%20remove%20such%20inconsistency. 68 Wired, "Syria's Internet Goes Dark During Exam Season", 2021, https://wired.me/technology/syrias-Internet-goes-dark-during-exam-season/.

strategically to carry out state violence.<sup>70</sup> The use of internet shutdowns for other reasons, especially during school exams, is therefore a large cause of concern. These shutdowns are acutely harmful to Syrian residents as the internet is the only real way to get information, often through social media platforms.

These outages are a violation of their human rights as it blocks their only real channel to access information.<sup>71</sup>

As we have seen in this report, internet shutdowns hugely harm the internet and reflect a notion that the internet is not very important to people's daily lives. As explained by Access Now, shutdowns during exams impact a variety of people and organizations such as students, teachers, parents, doctors, ISPs, telecommunication providers, and educational institutions. Further, these actions impact entire populations when governments use nationwide shutdowns rather than localized ones, which are overly disproportionate.

This tactic also continues to prove to be ineffective to prevent cheating. In Sudan, in 2021, the Islamic Studies exam was leaked and distributed and had to be rescheduled for July 3. In Jordan, exam cheating was not solved by disrupting the internet as there were numerous attempts to leak exam questions in 2021.<sup>74</sup> In Algeria, even with scheduled shutdowns and prison sentences for cheating, leaks were still reported, with one student being sentenced to a year in prison for leaking questions in 2020.<sup>75</sup> In 2021, 77 students were charged with "publishing topics and answers of the baccalaureate exams using remote communication tools." <sup>76</sup>

Regardless of whether the shutdowns prevented cheating or not, the cost they have on the economy and society is not proportionate to the goal. If shutdowns and threats of prison are unable to satisfactorily stop cheating on exams and information leaks, the reasons given for shutting down the internet cannot be justified and the harm caused by them greatly outweighs the benefit of preventing cheating.

<sup>76</sup> Marwa Fatafta, Kassem Mnejja and Felicia Anthonio, "Internet Shutdowns during Exams: when MENA Governments Fail the Test," Access Now 2021, https://www.accessnow.org/mena-Internet-shut-downs-during-exams/.



<sup>70</sup> Sarah Myers West 2015, "Research Shows Internet Shutdowns and State Violence Go Hand in Hand in Syria" EFF, https://www.eff.org/deeplinks/2015/06/research-shows-Inter-

net-shutdowns-and-state-violence-go-hand-hand-syria.

<sup>71</sup> Inaam Charaf, "Freedom of Expression and Access to Information in Syria Today" IFLA, 2021, https://-origin-www.ifla.org/publications/node/7951?og=30.

<sup>72</sup> Deji Olukotun, "We Need to Stop Shutting Down the Internet for School Exams," Access Now, 2017, https://www.accessnow.org/need-stop-shutting-Internet-school-exams/.

<sup>73</sup> Ibid.

<sup>74</sup> Ibid.

<sup>75</sup> Emna Sayadi and Dima Samaro, ''Internet Shutdowns in Algeria and Sudan: damaging practices during exceptional circumstances," Access Now, 2020 https://www.accessnow.org/Internet-shut-downs-in-algeria-and-sudan-damaging-practices-during-exceptional-circumstances/.

# Conclusion

Internet shutdowns are never an appropriate measure. They harm the health and resilience of the global internet, and the opportunities it offers for economic growth and development. They also violate individuals' rights to access information. The use of internet shutdowns to prevent cheating during exams is particularly disproportionate and reveals a misunderstanding of the importance of the internet. Countries that are comfortable using shutdowns during exams often use them for other reasons as well.

Through this report, it has been made clear that we believe this response to exam cheating is excessive. The tactic is ineffective as it prevents people and economies from fully harnessing the power of the internet and the effect shutdowns have on society overshadows any possible usefulness of the measure. The Internet Society's Internet Way of Networking goals and enablers are also negatively impacted by these methods.

The internet is a vital aspect of people's lives: it allows for communication, access to information, and access to services. It must not be shut down, throttled, or blocked to serve any purposes, including during exams to prevent cheating.



# Recommendations

#### Governments and decision-makers

Refrain from shutting down access to the internet and disrupting access to platforms and services as a measure against exam cheating. Such responses are not effective, nor justified. They are harmful to the health and development of the internet, and costly to the economy and societies, as explained in this report.

Governments should institute policies and measures to prevent exam leaks from happening in the first place through strong security techniques such as encryption and access monitoring.

Initiate reform to abolish legal provisions that allow for shutdowns and government control over the internet infrastructure, and to enable regulators to act independently and in the interest of all internet users.

### Civil society groups working in the region

 Document cases of internet shutdowns during exams to help raise the public's awareness about their ineffectiveness in preventing cheating and the residual harm they cause.

• When the legal and political context allows it, consider engaging with decision-makers, regulators, and lawmakers to advocate for an end to internet shutdown practices.

• When possible, consider strategic litigation as a tactic to help end the practice of internet shutdowns.

#### **Private sector**

• To the extent legally permissible, telecommunication companies and Internet Service Providers (ISPs) should work with relevant stakeholders, including civil society and academic sector to advocate for an end to this practice. Together with governments, they can also work to find practical and feasible solutions to problems such as cheating in exams other than shutting down the internet for large parts of society.

Telecommunications companies and Internet Service Providers (ISPs) should regularly publish transparency reports containing data on the number of orders they receive from governments to shut down their networks and disrupt access to their services. They should also notify users with advanced notice before they implement such orders.

<sup>78</sup> AlArabiya News, "Morocco Launches Electronic Clampdown on Cheating Students," 2015, https://english.alarabiya.net/perspective/features/2015/06/02/Morocco-clamps-down-on-e-cheating-students



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Other countries such as Sudan, Algeria, Jordan, Mauritania, and Tunisia<sup>6</sup> all followed suit. Iraqi authorities even used a shutdown to prevent cheating by sixth graders —12-year-olds— in 2016.<sup>7</sup>

This report focuses on internet shutdowns during exams in the MENA region, and will focus more extensively on Algeria, Jordan, Sudan, and Syria as these four countries all used internet shutdowns in 2021 to prevent exam cheating. Mauritania and Iraq last used this method in 2019. It is unclear if this is a purposeful end to the practice in those countries or if it is due to the COVID-19 pandemic and the greater need for people to be connected to the internet, as there was a slight decrease in documented cases of internet shutdowns around the world due to the pandemic in the last two years.<sup>8</sup>

There are different ways for authorities to exert control over the internet in addition to fully shutting down access to it. Throttling, jamming, and app blocking are all commonly used methods. Throttling is when internet speed is deliberately slowed down to prevent users from having any meaningful access to the internet. Jamming is usually done by using a signal-blocking device that blocks both phone and internet signals in a specific geographical area.<sup>9</sup> Blocking applications requires Internet Service Providers (ISPs) to block specific protocols or connections to specific servers hosting the target applications. This report analyzes the effects of the uses of all these techniques as a method to prevent cheating during exams.

Atlantic, https://www.theatlantic.com/technology/ar-

<sup>9 &</sup>quot;What is Jamming," IGI Global, https://www.igi-global.com/dictionary/security-issues-networks/15947#:~:text=Jamming%20is%20a%20simple%2C%20yet,devices%20being%20unable%20to%2 Otransmit



<sup>6</sup> Tunisia previously resorted to localized shutdowns limited to a few blocks from examination sites. 7 Kaveh Waddell, "Iraq Shut Down its Internet to Prevent Sixth-Graders from Cheating", 2016 The

chive/2016/05/iraq-shut-down-its-Internet-to-prevent-sixth-graders-from-cheating/482946/ 8 Jigsaw, "The Internet Shutdowns Issue," The Current, Jigsaw, https://jigsaw.google.com/the-current/shutdown/.

## Recommendations

Widespread cheating in exams is a serious issue and reflects the shortcomings of the educational system. Authorities should prioritize reforming the sector to help students feel more prepared and able to pass tests and diversify testing methods to include critical thinking and problem solving skills.<sup>77</sup> Educational ministries should institute policies and measures to prevent leaks. This could be done by improving security and access in the distribution of exams through, for example, encryption and access monitoring. The onus should not just fall on students, and entire regions should not be punished by having their access to the internet disrupted.

Governments should also focus on having strict policies banning cell phones from examination halls and on having more security around the distribution and printing of the exam papers, which would be more effective at preventing cheating. Morocco, for example, has implemented strong regulations in response to school exam cheating.

If a mobile device is found at an exam site, the student in question will be banned from taking the exam for up to one year and must gain approval from a committee to retake the exam. Moreover, the Ministry of Education hired specialized inspectors to monitor students during exams. These types of measures are much more appropriate for dealing with exam cheating as they are specific and proportionate to the aim they are trying to remedy.

Below we summarize several recommendations for governments, decision makers, civil society, and telecommunications service providers.

<sup>77</sup> Ilham Nasser, "The State of Education in the Arab World," Arab Center Washington DC, 2018, https://arabcenterdc.org/resource/the-state-of-education-in-the-arab-world/.

