

# CODE TO INTEGRITY

Digital avenues to anti-corruption  
– also for her!



[illegible]

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This report aims to initiate a conversation about the possible digital avenues to integrity. The final part of the report is dedicated to the challenges presented by the gender imbalances in both corruption and technology. The key message here is that these imbalances need to be addressed to release the full potential of digital anti-corruption tools.

Main author: Susanne Sayers  
Graphic Design: Lisa Haglund Lang

# SETTING THE SCENE: TECHNOLOGY AGAINST CORRUPTION.

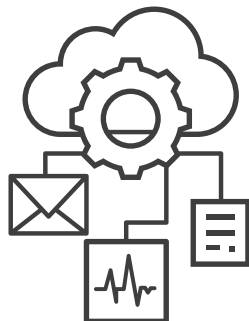
Digital technology and innovation can be powerful tools to reduce the opportunities for corruption and increase the risk of getting caught. Digital technology offers the prospect of greater oversight of government, businesses and stakeholders entrusted with a public office. This report aims to provide a brief overview of these tools.

Corruption is defined by Transparency International and several other organisations as “the abuse of entrusted power for private gain”. This definition comprises three essential elements: abuse (misuse, violation) of entrusted power (duty, office, etc.) and private benefit. And when discussing the opportunities to apply technology, basic questions as to how the potential tools can influence these three elements should be kept in mind.

The different technological tools can – as we will explore in this report – affect different types of corruption in various ways and thus it is helpful to introduce this distinction<sup>1</sup>:

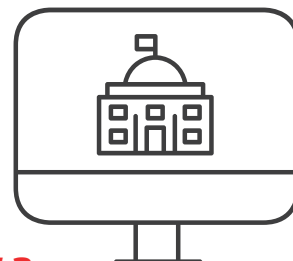
- *Petty corruption*, sometimes also called “administrative” or “bureaucratic” corruption, refers to the everyday corruption that takes place when bureaucrats meet the public. While the sums of money involved tend to be small, they are far from “petty” for the people concerned. Examples include paying bribes to obtain an identification card; enrollment in school; or informal fees in the health sector.
- *Grand corruption* is both narrowly used to designate the manipulation of policies, institutions and rules in the financing of political parties and in electoral campaigns, and also more broadly as a synonym for “political corruption”, or corruption taking place at the highest levels of government where policies and rules are formulated and executive decisions are made. Grand corruption usually also involves high amounts of money.

<sup>1</sup> [www.u4.no/terms#](http://www.u4.no/terms#)



## AVENUE 1

→ Use open data and open contracting to provide transparency



## AVENUE 2

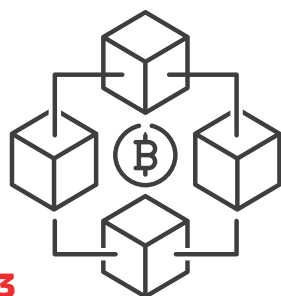
→ Use e-governance to mitigate corruption opportunities

The digital avenues featured all have the potential to enhance transparency and to curb the opportunities for corrupt behaviour. Others are emerging as viable solutions and could be the next frontier in digital anti-corruption.

Machine learning and artificial intelligence can reveal patterns and practices that are too complex for humans to detect. AI can process huge amounts of data and quickly detect patterns that could indicate problematic practices. Drones and microsatellites can take photos in real time to expose if a public building is not built as agreed or if a protected natural reserve is mismanaged and opened to illegal hunting, logging or unregulated fishing. The Internet of Things, connecting sensors and software in physical devices, will provide data and allow for greater insights that could eventually be part of fighting corruption. However, this is not the scope of this report.

Some technologies may seem immature, but they are evolving increasingly fast – they are on an exponential adoption curve. Soon they may be in the pocket of most citizens.

Yet, technology in and of itself will not win the war against corruption. Empowerment and skills to actually apply and use the technology are essential. And digital tools will have to serve the two pairs of accountability and transparency in the corruption equation: transparency helps shed light on the exercise of public power, and accountability is the obligation of an individual or an organisation (either in the public or the private sectors) to accept responsibility for their activities, and to disclose them in a transparent manner.



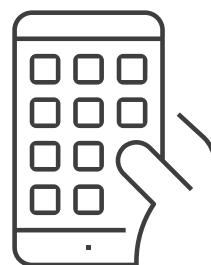
### AVENUE 3

→ Use blockchain to ensure rights and take out intermediaries

Nor will transparency be enough without the will and legislation to take action when corruption is revealed and to hold those responsible accountable.

While technology can be a great ally in this endeavor, it can also turn into a dangerous opponent if the prerequisites and analogue foundations for using technology are not present, and if existing inequalities are not taken into consideration. For instance, the abuse of big data compiled through the internet can be a real threat and has the potential to corrupt elections and democratic debates in society, and solutions based on data are never better than the data they are built upon. If the data is flawed or biased, those flaws could be embedded in a digital system, which could have wide consequences and lead to further injustices.

This report will provide a glimpse into the ideas, concepts and experiences in using technology in the fight against corruption. And it will focus specifically on the double inequality facing the poor and vulnerable, especially women. They are hit disproportionately by corruption, and they are less likely to be able to access digital tools. The report delivers key lessons for gender sensitive digitalisation in anti-corruption.



### AVENUE 4

→ Use crowd-sourcing to enable whistleblowing and complaints over corruption

# KEY OPPORTUNITIES

Information and Communication Technology (ICT) unlocks opportunities for smarter, faster and more transparent public institutions. This report maps and explores some of the opportunities and points to four avenues that each come with advantages and challenges.



## AVENUE 1 → Use open data and open contracting to provide transparency

Turn the public sector into an open data platform, as public data belongs to the people and is the most valuable resource for governments to tackle corruption.

Use open big data to investigate specific patterns, and as input to design predictive analytics tools to spot corruption risks.

- Publish data online in formats that let users explore and reuse the data, making it possible for civil actors and the private sector to see whether public goods or services are bought and delivered rightfully, holding authorities to account.
- Use open data as a catalyst for sparking innovation by the private sector and NGOs to design new digital anti-corruption tools. Government can organise data for anti-corruption hackathons for journalists, tech savvy citizens and organisations, to source new ideas of how to translate open data into digital anti-corruption tools.

Consider how to balance privacy rights with open data.



## AVENUE 2 → Use e-governance to mitigate corruption opportunities

E-governance takes out 'the human hands' when citizens or businesses deal with public authorities, reducing the opportunity for corruption.

- Move services online to give citizens and the private sector direct access to public services and information and to reduce the opportunities for corruption by limiting human interaction.
- Experiment with the use of blockchain to enable transparent and tamper-proof transactions of money and data, giving citizens ownership of their data.
- Design principle-based policies that stipulate issues such as when to make human interventions in machine decisions. This allows technology to rapidly evolve, transforming how corruption is tackled, whilst respecting a defined set of principles.

Make sure the services provided are the ones needed by citizens and businesses, and are easy to access.



## AVENUE 3 → Use blockchain to ensure rights and prevent fraud

The potential of blockchain, the technology behind cryptocurrencies, as an anti-corruption tool is of particular interest because of its ability to keep records securely and transparently, ensuring rights to aid, land, money and preventing fraud.

- Put records on the blockchain in a shared digital database that every individual has equal access to and ownership over, enabling people to claim their rights without being dependent on central authorities.



- Use blockchain to transfer resources quickly, efficiently and securely, also to those who do not have formal identity or a bank account.
- Use blockchain to secure the integrity of public goods, records and certificates, limiting the space for corruption.

Entrusting blockchain technology with administering rights of the individual is only viable if the papers and records are correct in the first place.



#### AVENUE 4 → Use crowdsourcing to enable whistleblowing and complaints over corruption

Petty corruption such as bribes as well as sexual extortion, usually directed towards girls and women, leaves no paper trail, making it difficult to expose through tools such as e-governance or open data.

- Use crowdsourcing platforms to provide citizens and business with a way to complain about and report corruption publicly.
- Cooperate with trusted organisations and businesses to provide whistleblower platforms to expose corrupt behaviour inside the public sector.

Consider how to maintain the safety of whistleblowers and citizens, and the value of anonymous vs. non-anonymous reports, but also ensure that there is due process for those accused of corruption.

Consider how to ensure that people know about and trust the platforms, and will use them. It is important to ensure that the users see the information being used to actually improve the situation.

### ATTENTION POINTS, REGARDLESS OF PLATFORM

- The legal framework must work in accordance with the digital tools, enabling their use and ensuring action when corruption is exposed. Digital tools are not enough; visible leadership and accountability is vital.
- It is important to consider the information flow: what is the direction of the information flow, who should control it, and who needs to act on it to address corruption? It must be clear when human intervention is needed on digital decisions, as digital platforms can also potentially take away entitlements of citizens.
- Digital tools are dependent on digital penetration and literacy. It is necessary to take digital divides into account when considering the application of digital anti-corruption measures. This is especially relevant for vulnerable groups, such as girls and women, as they are faced with a double disadvantage: They are hit disproportionately by both corruption and a digital gender gap.
- It is necessary to include the users when developing digital anti-corruption tools and platforms. This is particularly important in areas where existing structural inequalities otherwise may lead to the exclusion of vulnerable populations.
- Accountability and enforcement must be visible. The credibility of anti-corruption measures depends on the trust that exposed irregularities will lead to appropriate action.
- Everybody has the right to a due legal process including people accused of corruption. Processes, tools and systems need to ensure adherence to basic principles of justice.



## AVENUE 1

### → Use open data and open contracting to provide transparency

A growing number of countries provide open data from governments and public institutions to the public in a machine readable format that allows the users to explore and reuse the data, creating new insights and spurring innovation.

The OECD has made open data a priority in the fight against corruption, all G20 nations have agreed to the G20 Anti-Corruption Open Data Principles, whereas more than 60 governments, national and local, have adopted the Open Data Charter.

**According to the OECD there are several ways open data can assist in the fight against corruption:**

- It can increase transparency and accountability – for instance by showing where and how public money is spent. ‘Big data’-sets can be analysed for patterns of questionable practices. Predictive analysis based on open data can also mitigate corruption.
- It can improve government performance – it enables informed decisions and policies to combat corruption, and it can enhance cooperation between institutions, sectors, actors and countries.
- It can increase national competitiveness by ensuring that contracts are given on merits and by enabling analysis of the business climate and opportunities.
- It can expand social engagement by enabling civic actors and businesses to participate in innovation, audits and decision making.

Open data is also the foundation for open contracting. According to the NGO “Open Contracting Partnership” public procurement is the number one corruption risk for the public sector. The Open Contracting Data Standard enables disclosure of data and documents at all stages of the contracting process and allows a deeper analysis of contracting data by a wide range of users, creating a fairer procurement market that is open to all.

**<10%**  
of government datasets  
are in an open format<sup>1</sup>

Many detailed datasets in health, education, contracts, housing etc. may provide valuable insights but they could also threaten the privacy of individuals and businesses. The risks must be addressed while at the same time maximising the accessibility and use of open data.

How public institutions are organised and ICT infrastructure are frequent barriers to sharing information across sectors and branches in government. If the data is fractured, difficult to find, difficult to import, use and analyse, open data and open contracting will not deliver on their promises.

**The global spending on public procurement contracts amounts to almost 10 trillion each year, 15% of global GDP.<sup>2</sup>**

<sup>1</sup>Global Open Data Index

<sup>2</sup>Transparency International





## AVENUE 2

### → Use e-governance to mitigate corruption opportunities

E-governance where public services move online was not originally intended as an anti-corruption measure. Rather, it has been a way to increase efficiency and save resources, as well as increasing public responsiveness.

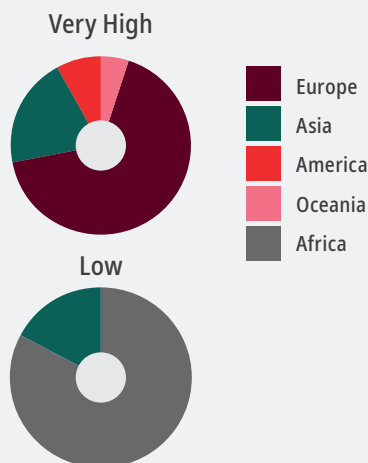
However, e-governance has turned out to be a powerful way to mitigate corruption opportunities because the direct interaction takes out 'the human hands' that might have been tempted to ask for bribes to advance requests and tasks.

Many nations are now investing in building e-governance as a means to not only increase productivity and service but to strengthen democratic values and

transparency. A number of studies have indicated that e-governance can explain some variations in the level of corruption between countries; mature e-governance means less risk of corruption. This seems to be particularly true in developing countries.

E-governance can give citizens and stakeholders in the private sector better information on services important to them, enabling their participation in society and making it easier to question practices and procedures, holding governments to account. If public institutions also maintain detailed data on transactions, they can track and trace potentially corrupt officials, which may deter corruption.

Global divide in e-governance between Africa, parts of Asia and the rest of the world<sup>1</sup>



There must be sufficient resources allocated for maintenance and necessary updates of software and information.

One key challenge is to ensure that the systems are user friendly at all levels. Citizens and businesses should find them easy to access and navigate, and so should civil servants.

**All 193 Member States of the United Nations have national portals and back-end systems to automate core administrative tasks, and 140 provide at least one transactional service online. The three most commonly used services are payment for utilities (140 countries), submitting income taxes (139 countries), and registration of new business (126 countries).<sup>3</sup>**

<sup>1</sup> Regional distribution by E-Government Development Index Level, UN E-Government Survey 2018

# CASE #1

## – THE GOVERNMENT

### THE X-ROAD – A CASE FOR E-GOVERNANCE TO COMBAT CORRUPTION

Estonia presents its e-government as among the most advanced in the world. It is also among the least corrupt, in 2017 ranking 21 on the Corruption Perception Index, much better than the other post-communist countries in Eastern Europe. It also ranked first in the Cyber Security Index and the Freedom on the Net Index.

This was not always the case. When Estonia regained independence in 1991, the nation was thinly populated without natural resources. The Estonian leadership realised that Estonia had to build upon something else and turned their eyes to the internet and the growing numbers of digital solutions, and decided to focus on that.

Corruption was widespread and the government decided to fight that by adopting the Anticorruption Act, and by including corruption in the penal code in 1995. Ever since, combatting corruption has been a priority, and e-governance has been one of the most powerful tools. “You can’t bribe a computer,” as former president Toomas Hendrik Ilves has said.

In the effort to use digital tools as a driver for economic growth, efficient governance and trust building have gone hand in hand with a major program to increase digital literacy and access. Rights to access information held by Estonian authorities was made a constitutional right, and in 2000 the government issued a law declaring internet access as a fundamental human right of its citizens.

**A number of studies have established the link between Estonia’s digital efforts and the fact that the level of corruption has decreased significantly. The main mechanisms are:**

- Transparency. A number of court cases have shown that this in Estonia is coupled with political will, accountability and enforcement.
- Removing the potential for corruption by eliminating human interaction in key processes

- Efficiency, which provides more resources to focus on quality
- Empowerment of citizens to act directly and to hold decision makers and leaders accountable. Estonia also has a very diverse civil society which is encouraged and supported by the government.

#### WHAT IT OFFERS

##### E-identity

In Estonia, every person can provide digital signatures using their ID-card, Mobile-ID or Smart-ID, so they can safely identify themselves and use e-services.

The chip on the card carries embedded files, and using 2048-bit public key encryption, it can be used as definitive proof of ID in an electronic environment. This identity is even offered to foreigners who do business with Estonia, enabling them to approach the e-governmental services and portals.

##### E-land register

The e-land register establishes rights to land and provides total transparency; listing the registered owner of each property holding, showing the property boundaries and providing other information that potential buyers need to know.

##### E-healthcare

Each person in Estonia that has visited a doctor or a hospital has an online e-Health record that can be tracked. Identified by the electronic ID-card, the health information is kept secure and at the same time accessible to authorised individuals. Blockchain technology is being tested for the system and will be implemented in the near future to ensure data integrity and mitigate internal threats to the data.

## I-voting

Estonia was the first country in the world to use voting through the internet a possibility in elections. Internet voting, or i-Voting, is a system that allows voters to cast their ballots from any internet-connected computer anywhere in the world. During a designated pre-voting period, the voter logs onto the system using an ID-card or Mobile-ID, and casts a ballot. The voter's identity is removed from the ballot before it reaches the National Electoral Commission for counting, thereby ensuring anonymity. Nearly a third of all Estonians used this solution at the latest election.

There are a large number of other digital solutions including e-education and e-finance and business, and the number is increasing. The digital start-up community in Estonia is large, and twice as many students pursue IT careers in Estonia than the average in other OECD countries.

## CHALLENGES

- E-identity solutions are not entirely hacker-proof and governments need to continuously ensure that the digital solutions, platforms and systems reflect the highest standard of security. This requires regular technology updates, which may be perceived as cumbersome by citizens and civil servants alike.
- In spite of e-governance offering a digital avenue to anti-corruption it does not take out different types of favoritism or other kinds of corruption which may be hard to trace.

## HOW IT WORKS



The backbone of the Estonian e-governance infrastructure is the data exchange platform X-Road that connects all e-government services, which are able to interact and share information.

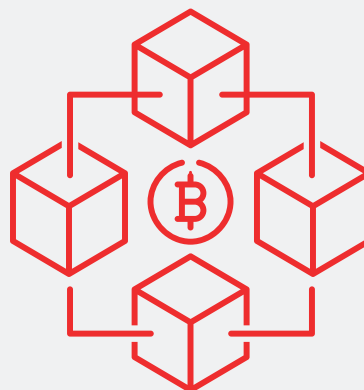


Originally X-Road was simply used to send queries to different databases. Now it has developed into a tool that can also write to multiple databases, transmit large data sets and perform searches across several databases simultaneously.



The databases are decentralised, and new modules and services can be added independently without having to restructure the whole infrastructure. This decentral and modular approach allows for greater flexibility, fast innovation and adoption of new possibilities.

## AVENUE 3



### → Use blockchain to ensure rights and prevent fraud

Blockchain emerged as the technology behind cryptocurrencies, but it has shown potential as a game changer in the public sector, and new and innovative uses are being developed and tested at a high pace.

What makes blockchain unique is its ability to secure data, ensuring integrity by certifying records and transactions in a decentralised way. It is essentially a system to encrypt and verify information through a shared database.

According to the World Economic Forum, blockchain provides “an unprecedented level of integrity, security and reliability to the information it manages, reducing the risks associated with having a single point of failure. It eliminates the need for intermediaries, cuts red tape and reduces the risk of arbitrary discretion. It also makes it possible to track and trace transactions. The immutable trail of transactions can be used by law enforcement and government auditors.”

A number of countries are experimenting with turning rights into code on the blockchain. Land registry and ID on the blockchain are two examples that enable the right holder to carry proof of rights or identity in a digital device such as a smart phone or a computer.

Another use is verification of certificates and authorisations such as educational or medical credentials. By putting them on the blockchain the space for corruption is limited considerably. Direct distribution of aid and financial services is yet another example that eliminates big transaction fees and the risk of illegal misallocation or draining of funds and resources through corruption.

One major problem of corruption is the corrosion of trust it creates. The increasing amount of cyber attacks and breaches of data has also eroded trust in the information and communication technology. Blockchain has the potential to restore trust in ICT.

#### Potential use of blockchain technology<sup>1</sup>

- Instant and close to zero-cost of money transfers.
- Reduces or eliminates the need for institutions whose main purpose is to validate transactions such as banks, land registries, accountants, registry of births and deaths, vehicle registration etc.
- Full transparency of all data on the blockchain.
- Quick and easy access to formal ID for all.
- Full traceability of who does what on the blockchain - the space for corruption is limited considerably.

**Many blockchain-based solutions require sensitive data to be linked to an individual identity (e.g., linking a property title to a homeowner, or identifying information to an aid recipient), which raises concerns about data privacy. A number of solutions are being tested, such as pseudonimities and limited blockchain networks. Privacy and the “right to be forgotten” has to be addressed when considering storing data on the blockchain.**

**Blockchain solutions are only as good as the data entered into them. Data entered into a blockchain cannot be deleted, erroneous data can therefore have enormous consequences for an individual.**

<sup>1</sup>Center for Global Development

# 70%

of the global population  
lack access to proper land  
titling

# 1.1

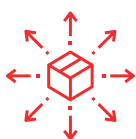
billion people lack proof of  
their legal identity<sup>1</sup>

## HOW BLOCKCHAIN WORKS

Blockchain is a distributed database that can certify records and transactions. Any kind of structured information can be stored on the blockchain – financial transactions, ownership, contracts, certificates, authorisations etc.



When somebody enters data on the blockchain, a mathematical algorithm turns the data into a secure line of code, a 'hash'. This is like a unique fingerprint, guaranteeing the validity and integrity of the data.



This data is then distributed digitally to everybody in a network. It is like distributing a contract but with the important difference that nobody gets a copy – everybody gets the original, and no central ledger or institution like a bank, credit card company or government institution is necessary to verify the validity.



Once the data is verified, cleared and stored on the blockchain, no single person can change the data. The entire history of the data on the blockchain would have to be re-written simultaneously. This makes data on the blockchain extremely difficult to alter or erase.



The unique code of data and the ability to detect if anyone tries to make changes means that participants can trust the data held on a blockchain without having to know or trust one another.

## CASE #2

# – HUMANITARIAN ASSISTANCE

### AID IN THE BLINK OF AN EYE – BLOCKCHAIN MEETS BIOMETRIC ID IN WORLD FOOD PROGRAM PILOT

When people flee their countries because of conflict, many leave their official government identity behind. Some of them never had one in the first place; more than one billion people worldwide have no birth certificates or other documents to prove who they are.

“No identity” means “no rights”. No bank account, no official ownership, no vote ... lack of official ID have consequences in many aspects of life.

Program (WFP) is piloting a project, ‘Building blocks’, where blockchain and biometrics shortcut the problem of an established identity. This is getting increasingly urgent as the WFP has shifted its focus from delivering food aid to giving cash for food, whenever it is a feasible alternative. The advantage of this approach is that it supports the local economy and gives the recipients greater autonomy over their lives.

But to transfer and receive money you normally needed a bank and therefore an official identity. The blockchain technology eliminates the need for both, operating in a completely different way with no need for centrally kept records of identity or bank balance.

This allows the WFP to assist refugees without middle-men, like banks and central registries. Linking biometrics to the support provided also limit the space for corrupt behavior or abuse of the identities of vulnerable refugees. WFP has put ‘Building blocks’ into use with refugees in Jordan and in Pakistan. As of October 2018 more than a 100,000 people living in camps get aid through the blockchain technology paired with biometric ID.

When refugees walk into a shop they literally pay with the blink of an eye. An eye scanner recognises them and the amount of money they have access to and then processes the transaction in less than a second and stores it on the blockchain.

According to the WFP there are several advantages: Taking out intermediaries such as banks and officials

reduces costs and increases speed. The system can identify potentially suspicious transactions in real time, further eliminating the possibility for scams and fraud. And the WFP get valuable insights into the patterns and needs of the users.

But the real potential of using blockchain for these kinds of transactions is building an eco-system where other humanitarian actors use the same platform. This could build an identity-platform for people who have none through the chain of transactions that are linked with them in their so-called digital wallet. A digital identity can assist in ensuring refugees can build a new life, where they could confirm their ID, get bank accounts, a wage and rights to vote, to health and ownership.

#### THE BENEFITS

- Reduces cost as the need for intermediaries such as banks are reduced.
- Increased transparency and security – it is very difficult to tamper with information on the blockchain.
- Speed and efficiency, saving transaction fees and enabling direct and fast transactions.
- Gathering big data can be transformed into valuable insights and predictive analysis, enabling faster and more efficient assistance and new innovations. However, sharing ownership of that data with refugees will be important.
- It can be used in situations outside the distribution of food or cash. Blockchain can turn any kind of data into a transaction which can be stored and shared and verified. This means that it can be the foundation of an eco-system of humanitarian actors who can share information and insights.

- It can be turned into digital identities and rights that recipients can store themselves in a digital wallet, for instance on a smartphone or computer.
- The public 'hash' – the coded information in the blockchain – can be seen by anyone in the blockchain network. However, the private "key", which works as a kind of password, can store sensitive information that people do not want to share with all, enabling privacy and protection of sensitive information.
- If an organisation or an institution decides to control all private keys, then the benefits of a decentralised network for security, transparency and other purposes will not be fully unlocked. As the institution will own the data and can decide who joins, the individual will not gain the autonomy otherwise inherent in the blockchain technology.
- There is the option of transferring the private keys to the refugees themselves with time, however, it may be a challenge for the person to get recognition of the data after returning to the state of origin.

## CHALLENGES IN BLOCKCHAIN FOR IDENTITY AND BENEFIT MANAGEMENT

- Using blockchain platforms to register and store private data to bring down corruption creates trade-offs between transparency and providing privacy and security.

### HOW IT WORKS



When a refugee arrives in a camp, the UN High Commissioner for Refugees, UNHCR, takes a biometric scan and registers it. The UNCHR reports to the WFP on which of the registered refugees need help.



The WFP creates a so-called digital wallet with an amount of money, which is coupled with the biometric identity at the UNHCR.



When refugees want to purchase food they go to a shop, their irises are scanned and the payment for the food is deducted from their allowance. They get a receipt telling them what they bought and how much money they have left.

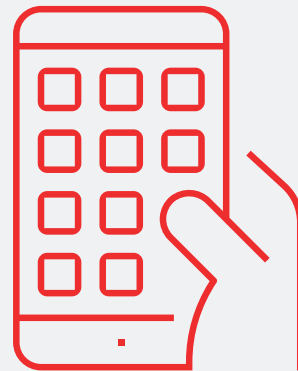


The transaction is stored on the blockchain, gradually building up a history of transactions that could eventually turn into a digital identity.

Recently UN Women have started using the 'building blocks' platform in the 'work for cash' program for refugee women. They can either purchase food or get cash from the shops with an eye scan.



## AVENUE 4



### → Use crowdsourcing to enable whistleblowing and complaints over corruption

Ordinary citizens and civil society organisations are frequently the first to see the possible applications of digital anti-corruption tools. They have been actively engaged in finding ways to mitigate corruption, including crowdsourcing- and whistleblower platforms that allow concerned citizens to share information about corruption.

The first three avenues work by publishing information and data on digital platforms, but crowdsourcing and whistleblower platforms have a different approach and history.

Most of these platforms have been initiated by civil society groups as a way to expose petty corruption. This is the kind of corruption ordinary citizens face when they have to pay extra for services that they are already legitimately entitled to. This could be getting a driver's license, a prescription for medicine, or it could be being forced to pay a bribe to avoid being charged with drunk driving or speeding even though no such offense was committed. Women are frequently the victims of sexual abuse, demanded as a kind of bribe.

This kind of corruption undermines trust in public institutions and their employees, and it leaves the poorest disproportionately affected since the bribes amount to a larger share of their income. This may mean that they are deprived of access to health and educational services that they were otherwise entitled to. This kind of corruption leaves no paper trail and cannot be exposed directly by digitalising data, although suspicious patterns may occur.

These platforms are becoming more common, some governments have made their own versions, often in collaboration with NGOs. In other cases, innovators work with the media and appointed investigative

journalists to ensure that reports of misconduct and corruption are independently researched and shared with a wider audience.

However, a number of platforms have not survived. Research has shown that the success of these kinds of platforms depends on a number of factors, for instance visibility and not least visible action as a result of the reports. Lack of feedback on reports is likely to discourage citizens.

#### A study from 2015<sup>1</sup> suggests that best practices include:

- Highlighting action options on what to do to help tackle corruption.
- Sharing success stories on how reporting has had an impact or how people have resisted corruption or made a difference.
- Adding positive rating systems as well, showcasing the value and prevalence of integrity.

**Feedback loops showing that reports of corruption are being treated seriously are crucial.**

**If people report anonymously it can be difficult to take action on the allegations. However, citizens may be reluctant to share their stories if their anonymity is not guaranteed.**



# 13%

of the income<sup>2</sup> of the poor in Sierra Leone is spent on bribes, whereas high income households pay 3,8%

# 1 TRILLION

US\$ is paid in bribes each year<sup>3</sup>

## CROWDSOURCING AND WHISTLEBLOWING PLATFORMS WORK IN THREE WAYS



They provide easy access to a tool that allows the victims to react: all it takes is a mobile phone. They empower citizens to complain safely, loudly and visibly when faced with petty corruption. The basic idea is to deter questionable behaviour by public shaming and visibility.



The platforms help to break the silence and allow people to discover if a service or an institution has a systemic culture of corruption or whether it is an isolated case.



The platforms can inspire collective action when users realise that they are not alone in being targeted.

<sup>1</sup> Crowdsourced Corruption Reporting: What Petrified Forests, Street Music, Bath Towels, and the Taxman Can Tell Us About the Prospects for Its Future, Zinnbauer, 2015

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## CASE #3

### – THE STARTUP

#### HIVEONLINE - BUILDING DIGITAL REPUTATION AND TRANSPARENCY

Imagine a small rural society. Everybody knows each other, and they know whom they can trust. Mike the painter has a reputation for overcharging, his competitor on the other hand always delivers and pays on time, the butcher has prime quality meat at reasonable prices, and the head of the committee has been known to pocket money for his own gain.

In that kind of world reputation is everything, and no matter how small you are, you will have a reputation that will help you get credit, jobs, goods, contracts – or make it difficult.

Now imagine this kind of society on a digital platform built on blockchain, Artificial Intelligence and data analysis, and you basically have hiveonline – an award-winning Danish start-up – which addresses the needs of small companies, helps them build up trust to gain them financial inclusion, and combats corruption with digital tools.

Trust is hard currency but it can be difficult to build up a record of being trustworthy in a global and fragmented world, especially for small enterprises which make up most of the world's businesses. Many of them are owned by people who have limited or no access to bank accounts and who cannot document their trustworthiness and professional ethics without a huge amount of paperwork that would leave their resources exhausted.

To get public procurement contracts you usually have to prove that you can deliver on time, abide by a code of conduct etc. Because small companies have problems building sufficient documented track record, contracts frequently go to large companies, leaving smaller and more innovative competitors out.

This is where hiveonline steps in as one of the new digital ways to counter the challenges. It is a platform that enables companies, organisations and public institutions to interact and build a reputation through their blockchain-recorded actions as well as data analysis of their commercial interactions. By signing up to the platform, you agree to let your transactions be distributed on the blockchain and thus transparent to all. These interactions and the data associated with them are then translated into a trust score that can be used to convince public institutions that you are worthy of getting public procurement contracts or access to credit, just as other members of the platform network will get to know if somebody is not trustworthy. The transparency minimises the potential for corrupt behaviour, and it enables small companies to participate in bidding processes.

The founders of hiveonline stress that only commercial activities are monitored, and only facts are used. There is no evaluation based on opinions.

#### WHAT IT DOES

- It builds a record of trust based on facts and not opinions by using blockchain, AI and data analysis.
- It enables companies and their customers to do business directly.
- It offers transparency and insight into whether contracts are fulfilled, enabling trustworthy small companies to access the market in spite of their lack of records with banks.



Hiveonline is doing a number of pilot projects around the world, including some of the least developed countries such as Niger. According to the developers it serves developing countries particular well because of the challenges it addresses.

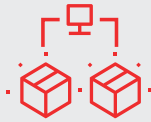
### CHALLENGES WITH DIGITAL REPUTATION

- Financial and government institutions have to be convinced that digital reputation tools are relevant and valid.
- Participating businesses and institutions have to be convinced that the platforms and the underlying algorithms are fair and that the reputation scores are a just representation of their commercial performance.
- The platforms get access to a large amount of data. All participating parties must trust that their data is not misused or misrepresented.
- Predictive analysis based on data is an emerging field. There are still a number of dilemmas, for instance how to object if a prediction seems unfair or if it turns out to be inaccurate.

### HOW IT WORKS



Any company, public institution or organisation can join hiveonline. By signing up you agree to have your data scrutinised, analysed and published, and you gain access to data about other members of the platform.



All relevant commercial data is distributed on a blockchain, and AI and machine learning can help analyse data patterns and form predictive analysis. Hiveonline protects any data that could be considered as personal.



The transactions and data accumulates into a trust score that can be used to get contracts, credit, or to decide who to do business with.



The platform can also be used to transfer contracts and money quickly and directly by use of blockchain, further limiting the risk of corruption. It can serve as a financial ecosystem for the unbanked.



**TECHNOLOGY DOES  
AMAZING THINGS FOR  
HUMANITY. I WANT TO BE PART  
OF A WORLD WHERE WOMEN  
ARE EQUAL PARTNERS IN  
DRIVING THE TECHNOLOGICAL  
REVOLUTION. IMAGINE WHAT  
COULD BE CREATED IF THE  
IMAGINATIONS OF BOTH MEN  
AND WOMEN WERE HARNESSSED  
TO THAT END?**

Hanna McCloskey  
founder and CEO, Fearless Future

# THE GLOBAL DIGITAL DIVIDE

**Digital tools to fight corruption depend on connectivity. But as internet and broadband access grows, so does the digital divide between the poor and rich, both between and within countries.**

The International Telecommunication Union, ITU, an agency within the UN, warns that the digital divide may become a digital chasm.

A little over half of the world's population has access to the internet but the distribution is wildly uneven. While well over 90 percent of the population of Scandinavia, the Netherlands and Bermuda have internet access, this is true for less than 10 percent of the population in many Sub-Saharan African countries.

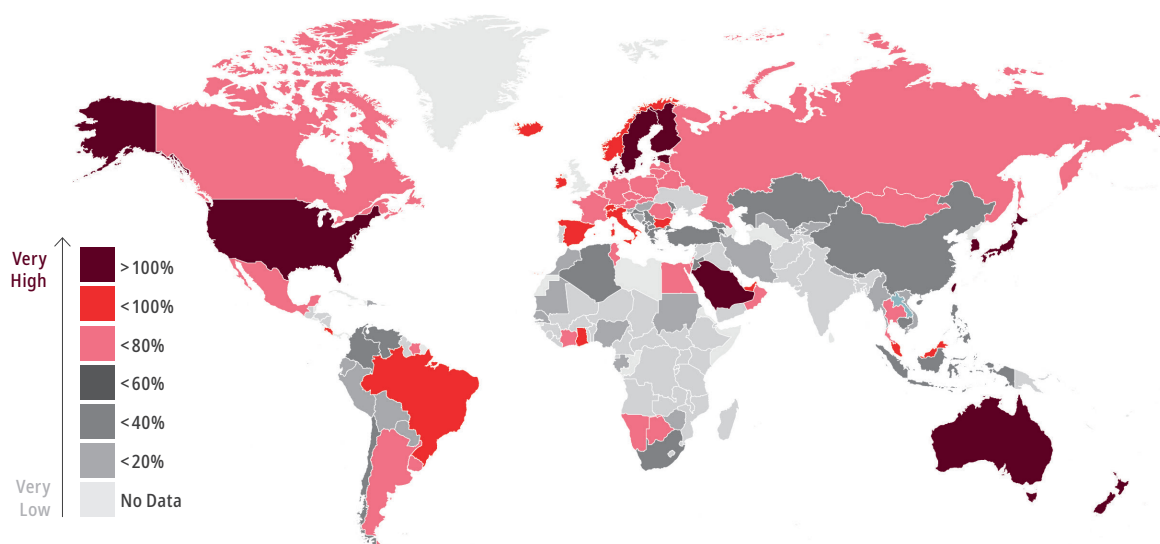
While 43 percent have access to a 4G connection, one out of four people have to make do with 2G – which is too slow to explore the internet effectively. In other words, in spite of the rapid growth in connectivity a large number of people are still connectivity, or under-connected.

This means that the advantages that information and communication technology that ICT provides cannot be fully harvested and may deepen already existing inequalities between rich and poor.

Lack of infrastructure, both in terms of connection and electricity, is a major obstacle, but here new broadband generations (5G) and off-grid electricity solutions could improve matters dramatically. Decentralised or mesh networks also hold promising potentials. However, the cost and lack of digital literacy are other key factors that leave the poor behind.

Fighting anti-corruption with digital tools must go hand in hand with an overall strategy of improving connectivity for all. Not only must the infrastructure be available and affordable, but skills must be developed to take advantage of the technology, and digital tools should be adapted to improve accessibility, for example by using symbols rather than written text for the illiterate.

## MOBILE BROADBAND PENERATION<sup>1</sup>



<sup>1</sup>ITU, 2015



# MAKING ANTI-CORRUPTION TECH WORK FOR HER

Application of technology cannot be oblivious to the social, political and cultural context in which it is operating. Deployment of digital tools interacts with social, cultural and economic relations to either challenge or reproduce existing inequalities.

Developing countries also suffer from the highest degree of inequality, and with inequality comes marginalisation of the most vulnerable. When applying technological solutions it is necessary to analyse how they will affect those particular groups, of which the largest group is women.

A number of the current gender imbalances in access to economic resources and enjoyment of fundamental rights are particularly important to consider when embarking on digitalisation in anti-corruption, otherwise they could exacerbate existing gender inequalities. A number of the most important of these imbalances include:

## IMBALANCE 1:

### The digital gender gap

Women have a lower degree of access to technology and lower digital literacy. If anti-corruption solutions are based on technologies, which women may not have access to, then the gender gap may widen. Because of the gender gap, more men than women will be able to register a small business or apply for government services, but those options are not open to women suffering the digital divide. They will be forced to navigate the analogue avenues marked by higher corruption risks, which can be a stumbling block to unlocking their economic potential and empowerment. This does not mean that anti-corruption efforts are not benefitting both men and women, but that women have to overcome extra barriers to access the benefits.

Women are also severely underrepresented in technological research and development. Evolving technologies such as AI and machine learning are based on existing patterns and assumptions, many of which are reflecting gender inequalities. Without the inclusion of women, not only as users but in the forefront of developing digital solutions, these biases could be engraved into our digital systems.

## IMBALANCE 2:

### Discrimination in ownership of economic resources

Both men and women face problems with formal ownership of property and land. However, in most poor communities, women face discrimination in terms of financial independence, ownership of economic resources and with regard to inheritance rights. If for example land registration is digitalised in an effort to eradicate corruption in land registration, there is a substantial risk that existing patterns of disempowerment of women are formalised through technology.

## IMBALANCE 3:

### Women are more frequently in the informal sector

Larger technology based anti-corruption efforts are likely to be based on existing data. Since women in Africa for example have a higher employment rate than men in the informal sector and lower representation in company ownership, there is a risk that solutions based on formal data will not capture the real significance of women in the productive sectors. Anti-corruption solutions could be biased towards sectors where women have a lower degree of participation, thereby ignoring the economic sectors where women are most active, excluding women from accessing the benefits offered by less corruption.

#### IMBALANCE 4:

##### Less access to formal ID

According to the World Bank Group's ID4D Global Dataset, an estimated one billion people around the world lack formal ID. 81% of them live in Sub-Saharan Africa and South Asia, and coverage gaps are largest in low income countries, with women and the poorest 40% at the greatest risk of being left behind. A formal ID is the key to unlocking access to a number of digital anti-corruption tools such as registering a business online, paying taxes through mobile money, making a bid for public procurement contracts, voting or registering property ownership on a e-governance platform.



#### IMBALANCE 5:

##### Women face sexual extortion

Because of unequal power relations, women are likely to experience corruption differently than men, especially in situations where power is abused to obtain a sexual benefit or advantage. These instances of sexual abuse are difficult to report and are likely not to be captured by normal definitions of, say, petty corruption. Tech-based solutions could assist women in reporting such instances, without having to challenge the entrenched power relations directly.

#### WOMEN ARE GLOBALLY...

# 26%

less likely than men to have access to mobile internet<sup>1</sup>

# 11%

less likely than men to use the internet. In the Least Developed Countries this gap widens to 32,9% and it is increasing<sup>2</sup>

# 10%

less likely than men to have access to a mobile phone<sup>3</sup>

<sup>1,2,3</sup> GSMA "Connected Women - the Mobile Gender Gap Report 2018".

# DIGITAL AVENUES TO ANTI-CORRUPTION IN A WORLD OF GENDER IMBALANCES

How existing gender imbalances interact with the digital avenues to anti-corruption is a topic that has received little attention. Focus tends to be on the technology; hence, the gender dimension is overlooked. It is the aim of this section to initiate a conversation about the importance of adopting a gender sensitive approach to digitalisation in anti-corruption, especially considering the structural disempowerment of women in access to economic and digital resources.

## AVENUE 1

→ Use open data and open contracting to provide transparency

Every year an average of nearly 10 trillion US\$ is spent on public procurement. A third of all businesses are owned by women, yet only 1% of these procurement contracts go to women. Governments can use open data and open contracting to provide transparency, investigate patterns of inequality and create fairer markets, also for women, to counter this imbalance.

However, the digital gender gap poses a disadvantage to women. Mobile penetration is lower among women than men. Also, women are less likely to have a smart phone, which is needed to access open web-based data initiatives. Women are also prevented from participation in open data initiatives due to high mobile data costs. Africa has the highest costs of data in the world. The median price across the continent is estimated at 7.04 dollars for 1 GB, with a majority of countries recording prices above the UN Broadband Commission's target of 2% of monthly income. Women predominantly work in the informal sector and generally earn less than men, making them less likely to spend expensive internet minutes on diving into open data sets.

Addressing this barrier to women's participation in digital solutions is a way to empower women. It offers women insight into how contracts are granted and whether women-led businesses tend to lose out in the selection process. Data which can equip them to advocate for gender targets in public procurement, something which has proven an effective tool

Collaboration to bring down the cost of mobile data or to make open data sites free to use can be one way to open up this anti-corruption avenue to more women.

A number of states are beginning to set clear targets for public procurement from women led businesses. With the transition to e-procurement this needs to go hand in hand with increased affordable connectivity and increased female usage of the internet, including through broadband.

## AVENUE 2

→ Use e-governance to mitigate corruption opportunities

E-governance is a broad term for a number of practices and strategies, one of which is shifting to cashless economies to make irregularities visible and traceable. In many countries, digital payments have overtaken cash. However, one billion women still have no bank account as they operate in the informal cash or barter based economy. Also, the fact that large numbers of women remain without a formal ID acts as a stumbling block to women's participation in cashless economies. Again, the digital gender gap means that electronic money transfers disproportionately leaves women out, even if they do have a bank account.

E-governance can make it easier to access important information and to hold public institutions and governments responsible. However, the digital gender gap prevents women from accessing e-governance platforms.

GSMA data show that the gender gap in mobile internet use is greater than the mobile ownership gap. 327 million fewer women than men use mobile internet. In addition, using data requires a degree of literacy. Two-thirds of the world's illiterate are women.

Governments can work to ensure that a transformation to a cashless society goes hand in hand with digital financial inclusion strategies explicitly targeting women.

Making e-governance sites less text heavy and more based on visuals such as symbols and videos is a way to enable more women with low literacy to benefit from the flow of information.

### AVENUE 3

#### → Use blockchain to ensure rights and prevent fraud

According to the OECD there are 200 current public sector blockchain experiments ongoing, or being planned, including efforts to combat corruption. One area where a number of experiments are currently ongoing is registration of value, most notably by transitioning land registries to a transparent and secure blockchain platform. A digital land certificate on the blockchain can enable the owner to trade the land digitally or to access a loan using the digital land record as collateral. In India one state is exploring a blockchain powered land registry to help tackle the problem of an estimated 700 million USD paid in bribes at land registrars across the country. A convincing use case for using digitalisation to help bring down corruption.

However, in many countries customary law grants the husband the formal rights to family land holdings. There is a risk that moving land registration to a blockchain without developing a more gender equal local land governance system could exacerbate existing gender inequalities by giving the men easier access to formal ownership.

Using blockchain in land rights require that countries work on strengthening the implementation of underlying land reforms, granting equality in ownership and inheritance to men and women.

### AVENUE 4

#### → Use crowdsourcing to enable whistleblowing and complaints over corruption

Various studies show that women are much more likely than men to be susceptible to petty corruption and sexual extortion, where they are forced to pay bribes with their body. This kind of corruption is virtually invisible which makes it more difficult to design digital countermeasures. However, crowdsourcing is a digital avenue that can shed light on this type of corruption and these crowdsourcing campaigns are moving to social media platforms.

The #MeToo campaign sweeping across the world showed that women are ready to speak up on such issues. It was a two-word hashtag used in social media to condemn sexual harassment trending in over 65 nations, including the UK, the Philippines, France and Pakistan.

However, using social media and messaging platforms is a digital avenue less open to women due to the digital gender gap. According to GSMA, the gender gap in the use of the world's most popular messaging app Whatsapp, is highest in most African countries such as DRC, Ethiopia, Ivory Coast and India, where women are 38% less likely to use IP messaging than men – 50% less likely in rural areas.

Hence, global crowdsourcing campaigns for reporting sextortion exclude a large share of women in developing countries. Another barrier is inequality in access to protection in the justice system as well as on the social media platforms. Amnesty International highlights in its 'Toxic Twitter' report that the platform is a space where women are confronted with threats of death or rape. This is a significant barrier to bringing women into reporting sextortion on social media platforms.

In addition, the fact that women work mostly in the informal sector means that they are not protected by anti-sexual harassment policies. This puts women in a weaker position when denouncing sexual pressures as bribes in the workplace.

## KEY LESSONS FOR GENDER SENSITIVE DIGITALISATION IN ANTI-CORRUPTION

### Lesson 1

Ensure that digitalisation initiatives take into consideration the systemic and structural discrimination of women and imbalances in access to, and ownership of, economic resources. It will be important to ensure that the application of technology is not gender blind. Otherwise, technology could entrench existing disempowerment of women and possibly widen the gender gap.

### Lesson 2

Women are overrepresented in the informal sector and underrepresented in business ownership. Technologies relying on formal and corporate sector engagement, such as public procurement initiatives, can therefore not be the only efforts, as they are likely not to benefit women and men equally.

### Lesson 3

Women face “sextortion” which cannot be addressed through standard tech-solutions. Women must be involved in the design of digital innovations to enable reporting and the capture of data on this type of corruption.

### Lesson 4

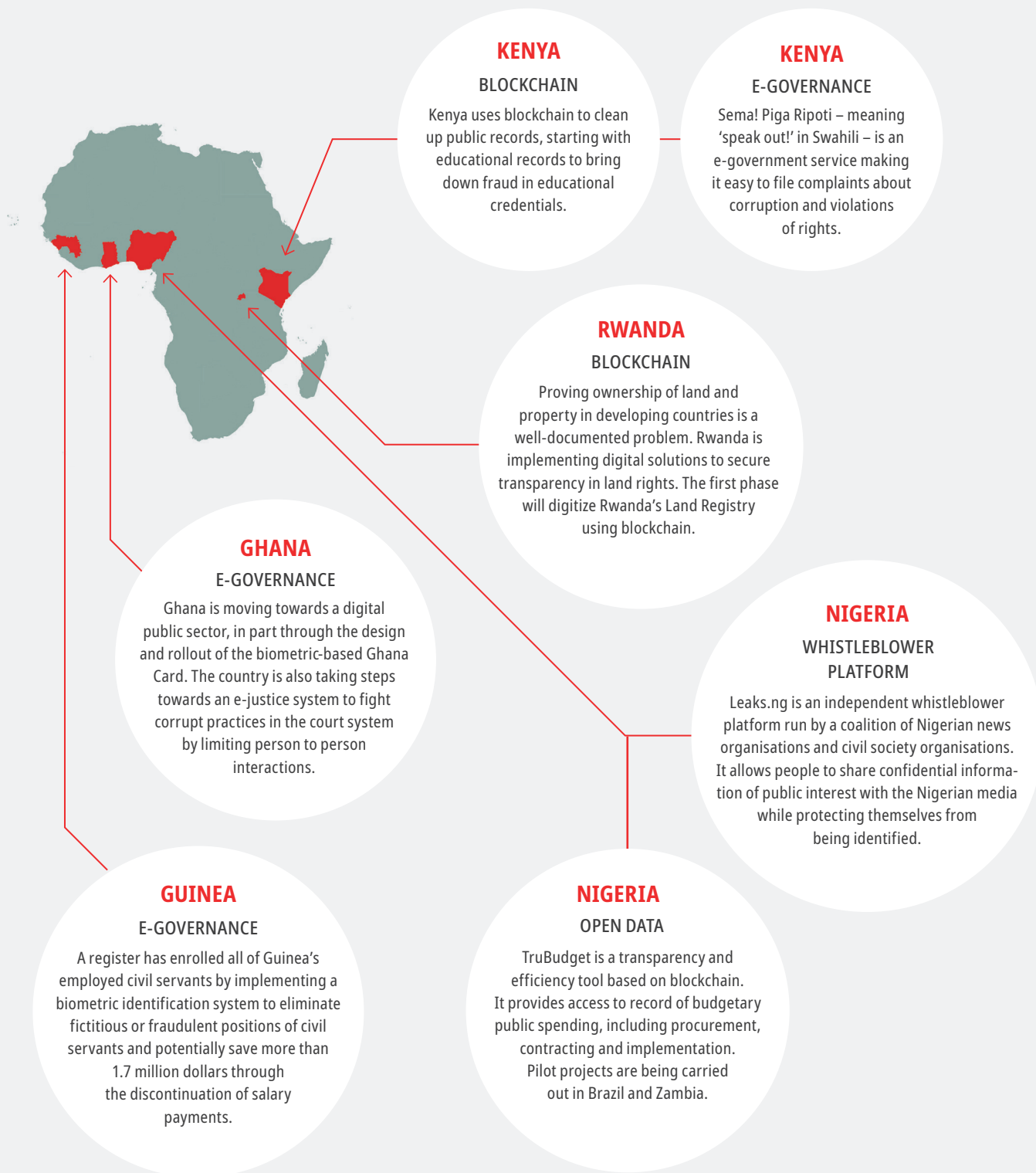
Include sexual extortion in the analysis and indexes of corruption.  
Information should be fed into the design of preventive policy measures.

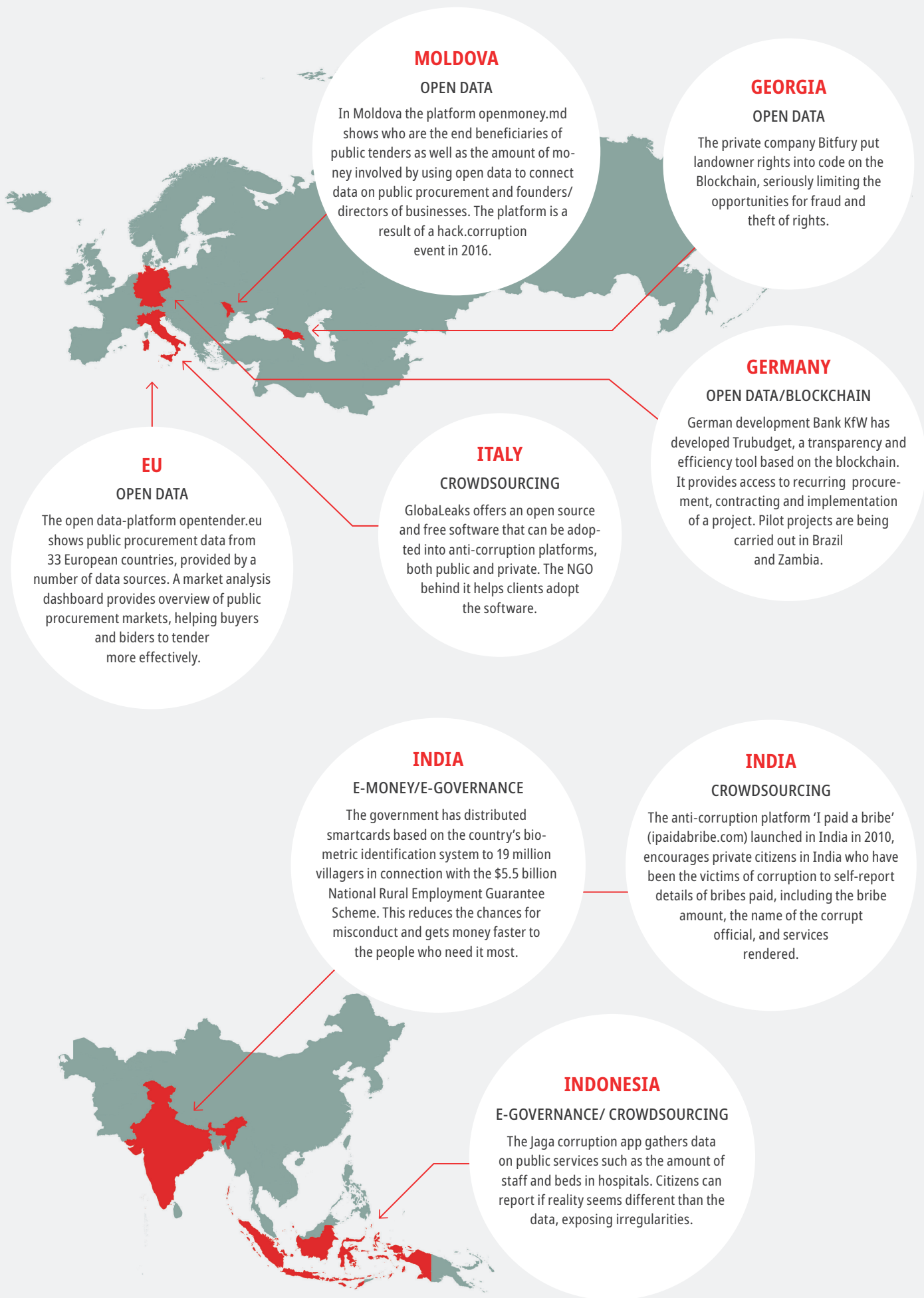
### Lesson 5

If technology is implemented with a clear gender focus, it can be a powerful tool for accelerating the fight for gender equality worldwide and assist many more women enjoying the benefits of technological advances.

# AN EVER EVOLVING LANDSCAPE

Due to the exponential growth of digital technologies, solutions are evolving at a rapid pace. Here are a just a few examples of how digital tools are being put to use against corruption around the world.







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### Disclaimer

The purpose of this publication is to initiate a conversations about the role of new technologies in the fight against corruption. Digital tools are rapidly evolving to combat corruption, the technologies and cases selected for this report reflect some of the new possibilities and applications but should not be regarded as official endorsement by the Ministry of Foreign Affairs/DANIDA. This report carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this report are entirely those of the authors, they do not necessarily represent the views of the Ministry of Foreign Affairs of Denmark/DANIDA.



