GSMA Capacity Building

Mobile for Socio-Economic Development in Asia Pacific

- Pat Walshe, GSMA

Recap of Day 1

Mobile as a driver of economic growth

Case Studies

Enhancing affordability through best-practice taxation

Financial inclusion

Digital literacy

Session 6: Mobile Agriculture

- Potential size of the market
- Types of mobile agricultural services currently available
- Creating an enabling environment for mobile agricultural services to flourish
- Case studies

What is Mobile Agriculture?

According to the World Bank, 75 per cent of the world's poor live in rural areas and the majority of these people are involved in agriculture. As a result, agriculture remains fundamental in the 21st century to eliminating poverty.

Mobile agriculture refers to the use of mobile technology across the agriculture sector. With mobile phone penetration in the developing world continuing to grow rapidly, mobile solutions can reach remote farmers in a way that no other form of communication can, helping them to improve productivity and increase efficiency throughout the agricultural supply chain.

Source: World Bank, The World Bank Group A to Z (2015)

An intro to mobile agricultural services

The current situation

Over 2.3 billion people in the world live in poverty and depend on smallholder farms for their livelihoods.

Many of the 500 million underserved, smallholder farmers worldwide lack access to relevant and timely information on planting techniques, crop management, pesticide use and weather forecasts.

This leaves them vulnerable to harsh weather conditions as well as pests and diseases that can destroy crops and harm livestock.

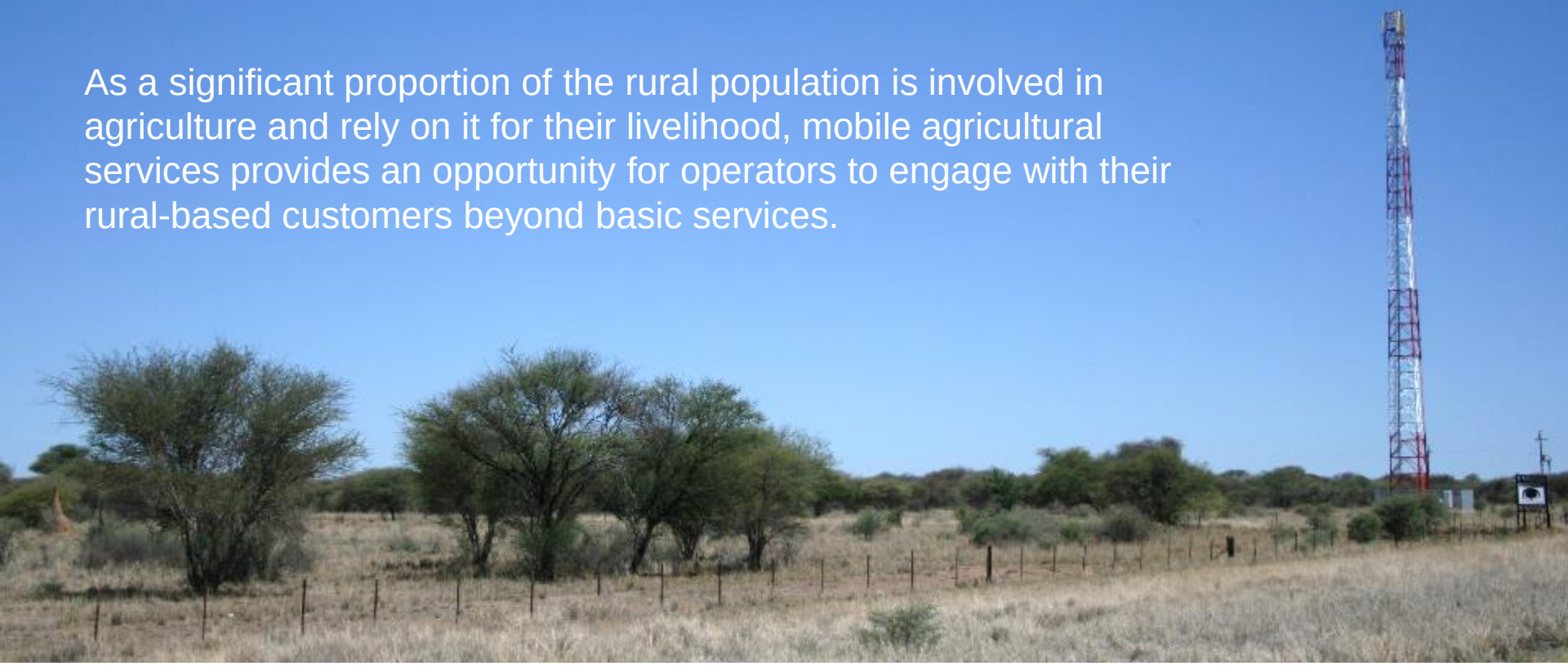
Harnessing the power of mobile

- 90% mobile penetration in the developing world (translating to a unique subscriber penetration rate of 45%)
- Future mobile growth will be driven by currently ‘unconnected’ populations
- GSMA estimates this to equate to 1.8 billion people over the next five years
- Mobile agriculture uses the reach of mobile to improve the lives of smallholder farmers
- The mobile channel allows for a level of scale not previously possible

Growth area for mobile operators

Many mobile operators in developing regions have adopted rural rollout strategies to take advantage of the subscriber growth opportunity in underserved areas amid declining growth in saturated urban areas.

As a significant proportion of the rural population is involved in agriculture and rely on it for their livelihood, mobile agricultural services provides an opportunity for operators to engage with their rural-based customers beyond basic services.



A need to boost agricultural production

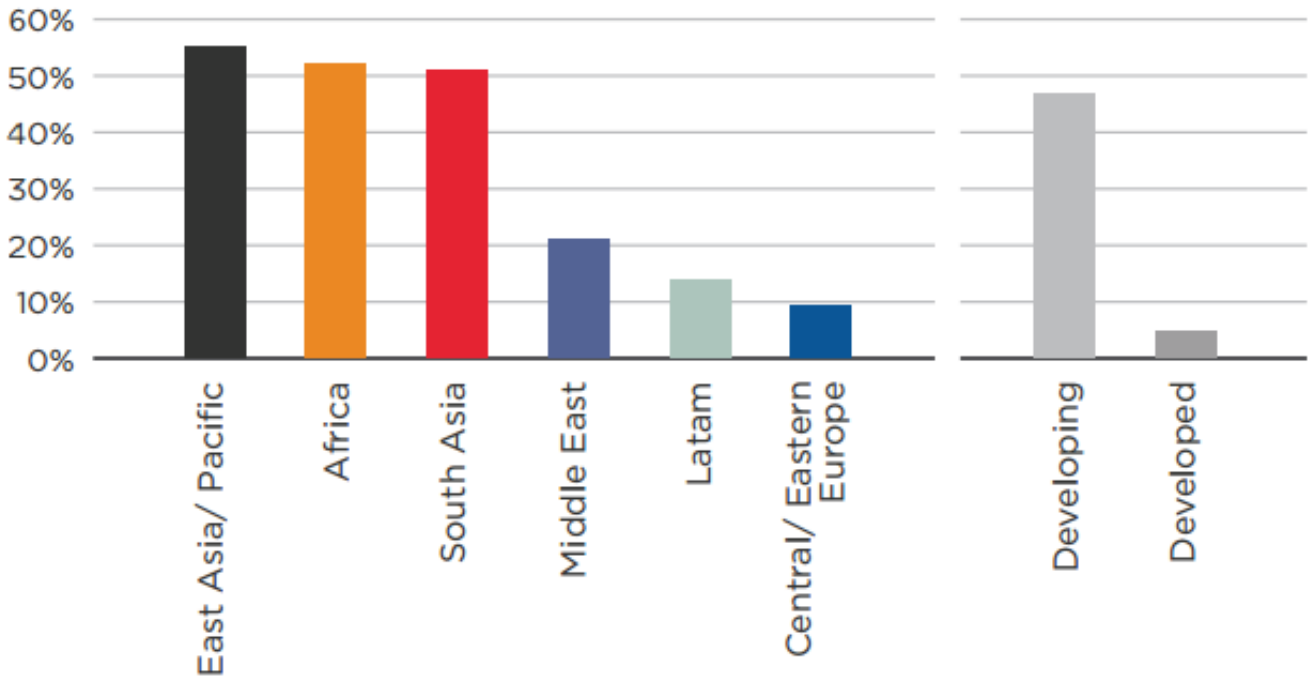
The world's population continues to grow and is expected to reach over 9 billion by 2040

In order to prevent food shortages, agricultural production will need to increase by 70 percent by 2050

Source: 2050: A third more mouths to feed, UN Food and Agriculture Organisation (FAO)

The majority of agricultural workers live in developing countries

Proportion of labour force in agriculture



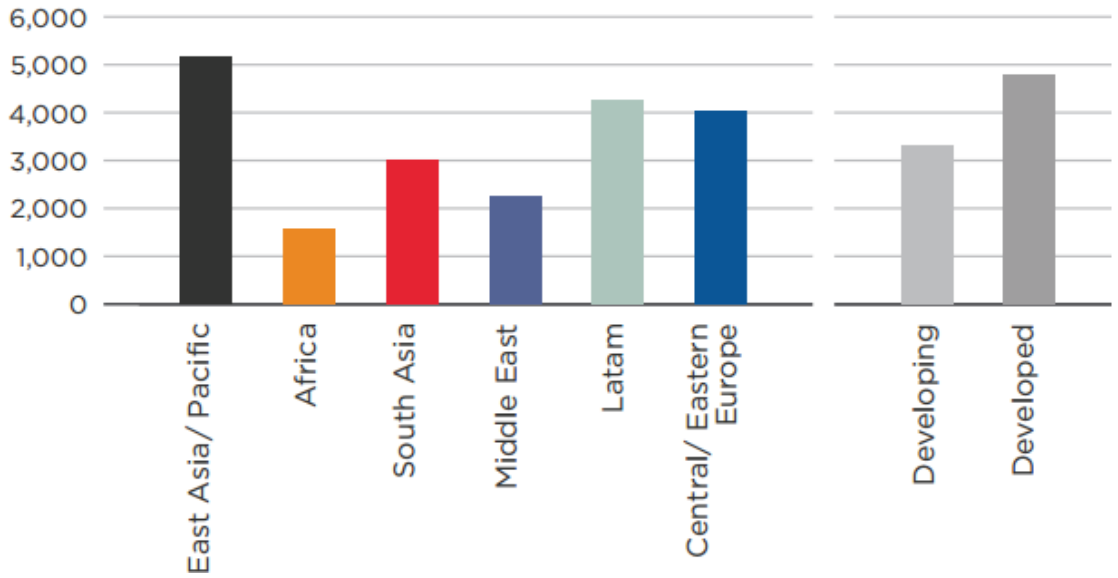
Source: FAO

More than 95% of the global agricultural labour force live in developing countries

The productivity problem

Unfortunately, the productivity level of farmers in developing countries is lower than that of their counterparts in developed countries.

Agriculture productivity (kg/hectare) 2013



Source: World Bank

- For example, cereal yield in developing countries, at 3,300 kg/hectare, is 70% of the yield in developed countries, at 4,805 kg/hectare.
- This underscores the need for farmers in developing countries to find efficient ways to increase food production.

How can mobile agricultural services help address these issues?

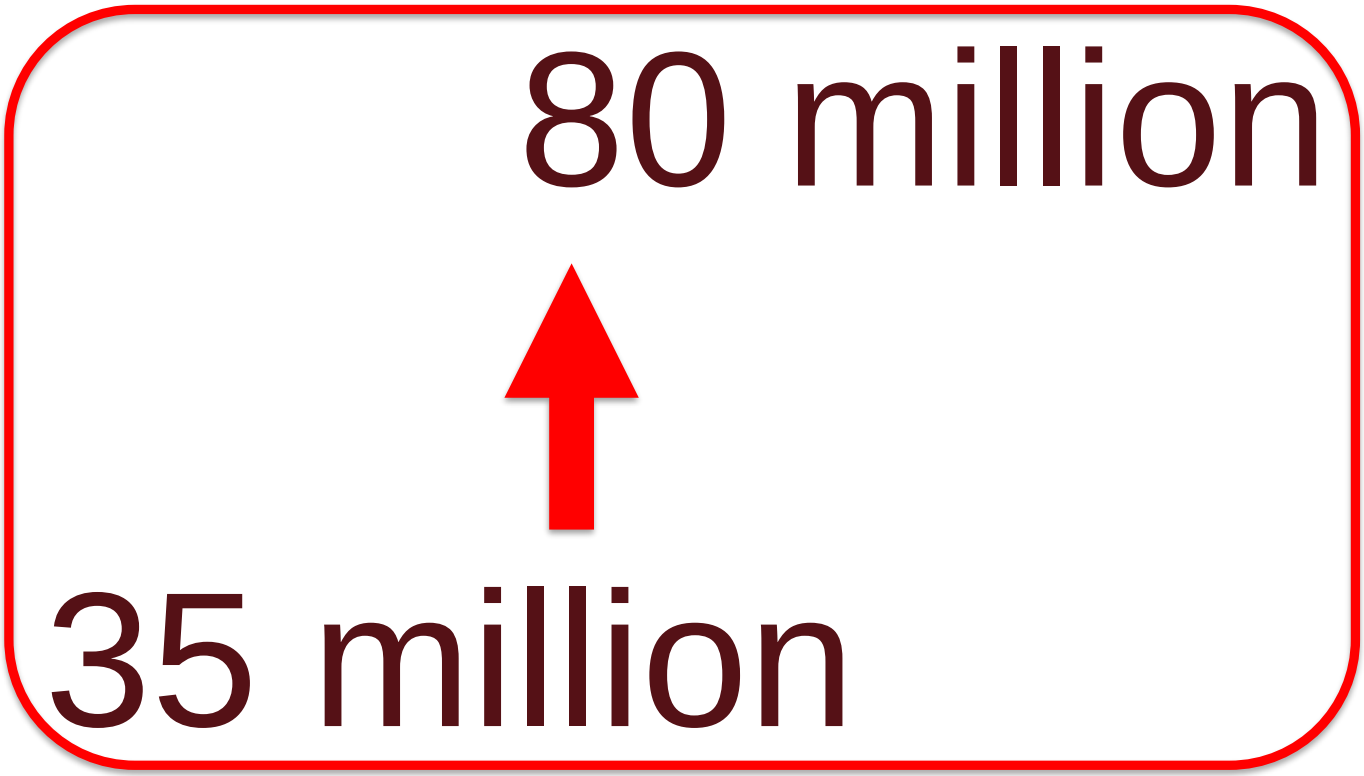
Mobile phones provide a channel to deliver information, financial products and services, and supply chain services to citizens and organisations involved in agriculture

Closing the information gap

One of the key reasons for the difference in productivity between farmers in developed and developing nations is the information gap.

- Mobile technology can bridge the information gap that many farmers face
- With better access to quality and actionable information, farmers can make more informed decisions and boost their productivity and income

Current and potential size of the market

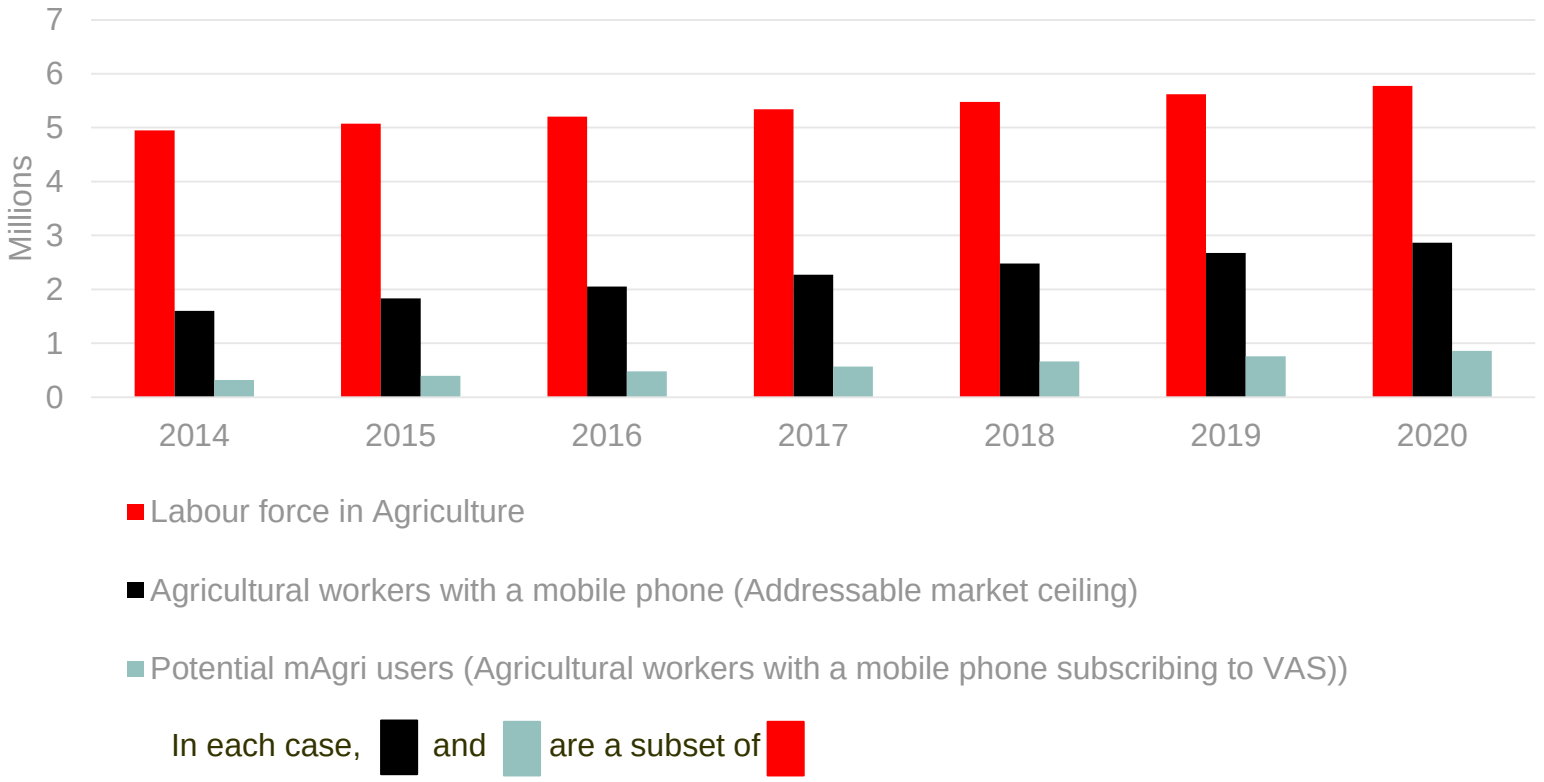


- GSMA forecasts the potential number of agricultural value added service (VAS) users in South Asia and Sub-Saharan Africa to reach 80 million by 2020, up from 35 million in 2014.

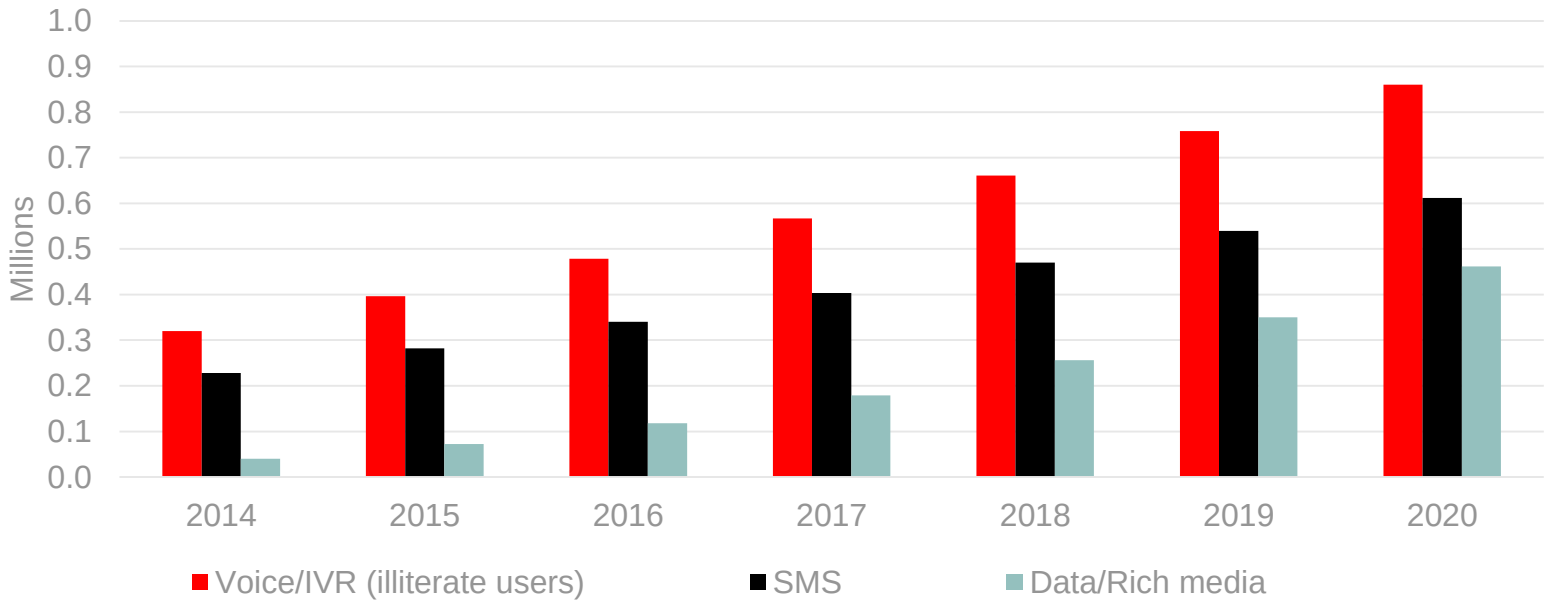
The situation in Rwanda

Agricultural VAS Market Potential	Cereal Yield	Comparative Regional Income	Number of Live Agricultural VAS Deployments Tracked
Mid Potential	Low Yield	Low Income	One

Estimated number of users of agricultural VAS services

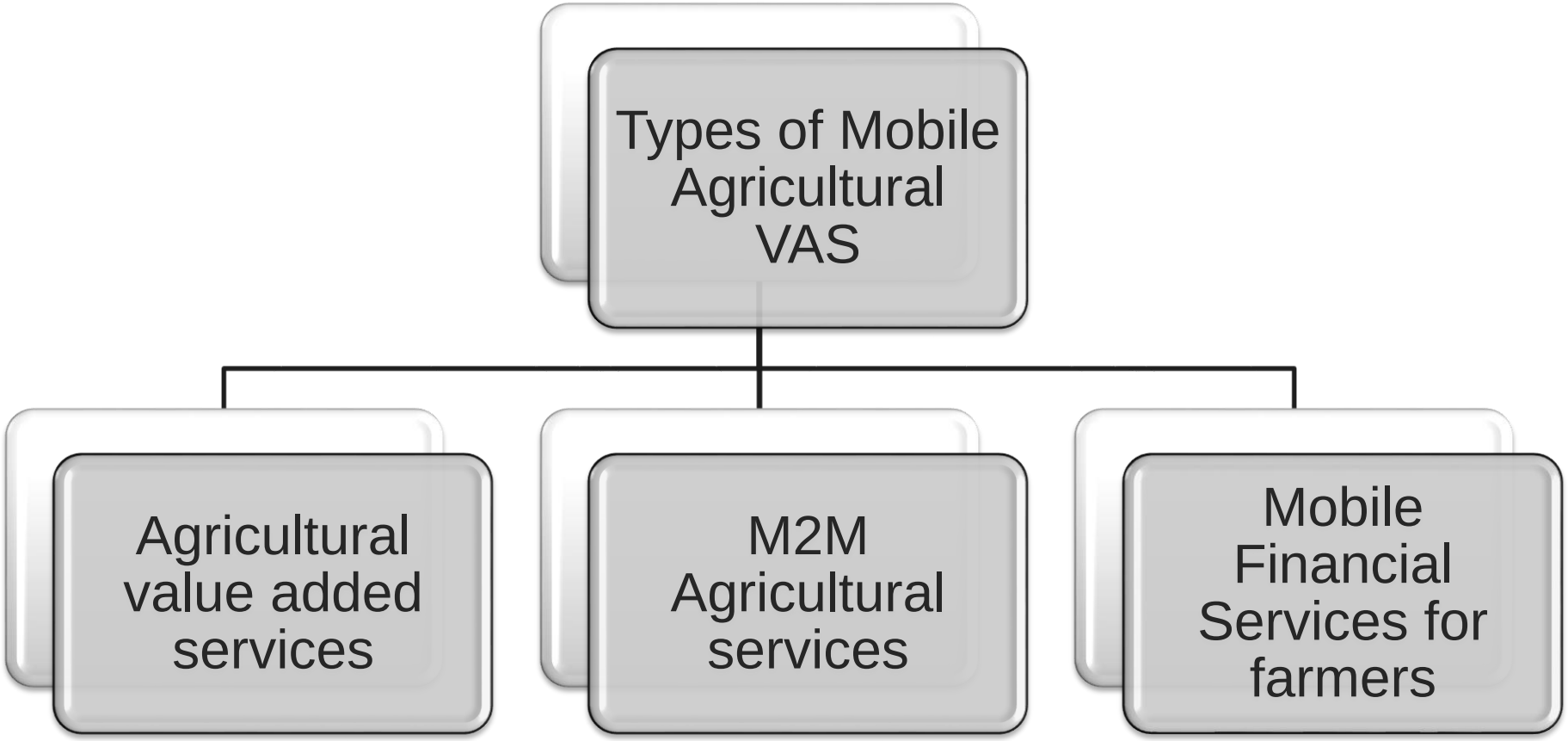


Users by delivery channel



Types of mobile agricultural services

Mobile agricultural services can be segmented into three broad categories based on the delivery mechanism, technology involved and challenge addressed.



Machine-to-human agriculture services

- These services are proving effective in tackling some of the factors that limit the productivity of farmers in developing countries

Machine-to-Machine agricultural services

- These types of services connect machines, devices and appliances together wirelessly to deliver services with limited direct human intervention

Agricultural mobile financial services

- In developing countries, nearly 60% of the population is unbanked, and those that do have a bank account mostly live in urban areas
- This prevents farmers from having loans, payment facilities, savings and insurance for protection against crop failure
- Agricultural Mobile Financial Services aim to address this gap

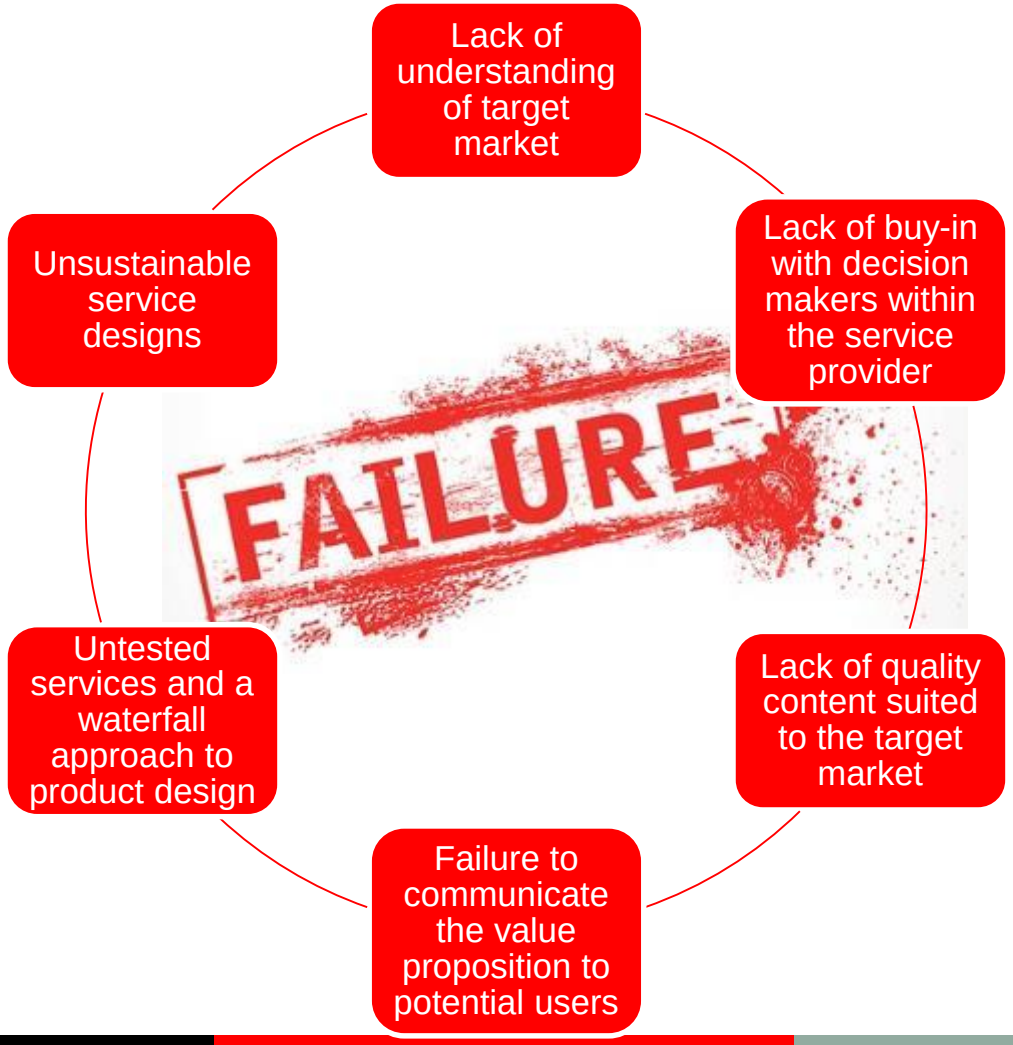
How these models address the key challenges faced by farmers

Mobile agriculture applications and service		Key Challenges the Service Addresses
Information and Monitoring Services		
VAS Information services • Weather • Market information • Agriculture (crop, livestock) • Peer-to-peer Input authentication Data Collection	**M2M** Equipment monitoring Precision agriculture Environment monitoring Livestock and fishery management	**Productivity losses** Poor knowledge of agricultural practices, new technologies, inputs Non-availability of market information around prices of agricultural produce, buyers and markets Lack of accurate weather information
Supply Chain Services		
VAS Matching platforms Traceability and tracking systems Management of supplier/distribution network	**M2M** Smart logistics	**Supply chain inefficiencies** Gap in supply-demand match Intermediaries act in silos Poor logistics and weak infrastructure, causing wastage
Mobile Financial Services for Farmer		
Payments to farmers via mobile money Savings & credit products Micro insurance for inputs, crops, livestock E-vouchers for agri-related products (e.g. inputs)		**Farmers' financial exclusion** Non-availability of loans, payment facilities, savings Non-availability of insurance for protection against crop failure or loss of livestock

Lessons in success from the field

- Voice channels on agricultural VAS should have an emergency option on the main menu for pest and disease control
- Education on the value and functionality of the service is key to driving adoption
- The pricing model must be designed around smallholder farmers' ability to pay
- Adding content on cash crops increases the value proposition
- A subsidised trial period or a freemium model allows customers to experience the value of the information available before committing to the service
- Services must have demonstrable benefits for a variety of stakeholders
- Marketing approach must be tailored to the rural, target audience and content should be personalised to the user

What causes agricultural services to fail?



Creating an enabling environment

Case Study — Using mobile to boost cereal yields

The situation:

- This country has an increasing cereal yield, but still lags behind the top performing countries in terms of output.
- Unpredictable weather patterns are an issue for the agricultural sector.
- Farmer's income levels are relatively low, so affordability of potential services is an issue.
- A major operator in the country is looking to expand its user base and has identified local farmers as a market that largely remains untapped.
- How could the operator specifically target the needs of agricultural workers in order to attract them to its service?

Case Study — Airtel Green SIM

The key issues:

- The cereal yield per hectare in India is increasing but still runs at less than half the rate achieved by the top ten high-yielding countries.
- Furthermore, changes in India's climate have strongly affected agricultural production, and some regions experienced unprecedented droughts in the summer of 2014.
- The sum of these occurrences help demonstrate that there is still a need for a service that aims to empower farmers and increase food security in India.

Case Study — Airtel Green SIM

The approach:

- Launched in 2007, the Green SIM card provides subscribers with regular network services, just like any other Airtel SIM card, but in addition provides free voice and SMS messages with agricultural content.
- Customers also have access to a helpline (for which they pay regular network rates) where they can speak directly with agricultural experts to ask questions.
- Agricultural content is a mix of state-level, district-level and more localised information.
- Airtel Green SIM users receive four voice SMS and one text SMS daily on topics covering agriculture, education, health and employment.
- Green SIM cards cost the same as a regular SIM card, approximately $1.

Case Study — Airtel Green SIM

The outcomes:

- Key to the success of the Green SIM service is the partnership between Airtel and the Indian Farmers' Fertiliser Cooperative (IFFCO) to leverage its extensive marketing, sales, promotion and distribution network.
- 5% of all of Airtel's rural acquisitions come through the Green Sim programme.
- New user acquisitions for Green SIM are running at an average of 150,000 per month.
- The content provided by the service has been well received by the user base, with 98% of farmers saying they trusted the information they received.

Activity

EXERCISE:

Hopes and Fears

Break: 10:45 – 11:00

Session 7: Health Service Delivery

- The role of mobile in health service delivery
- Regulatory considerations
- mHealth in emerging markets: case studies

The role of mobile in healthcare service delivery

Worldwide, healthcare providers are being asked to deliver more for less.

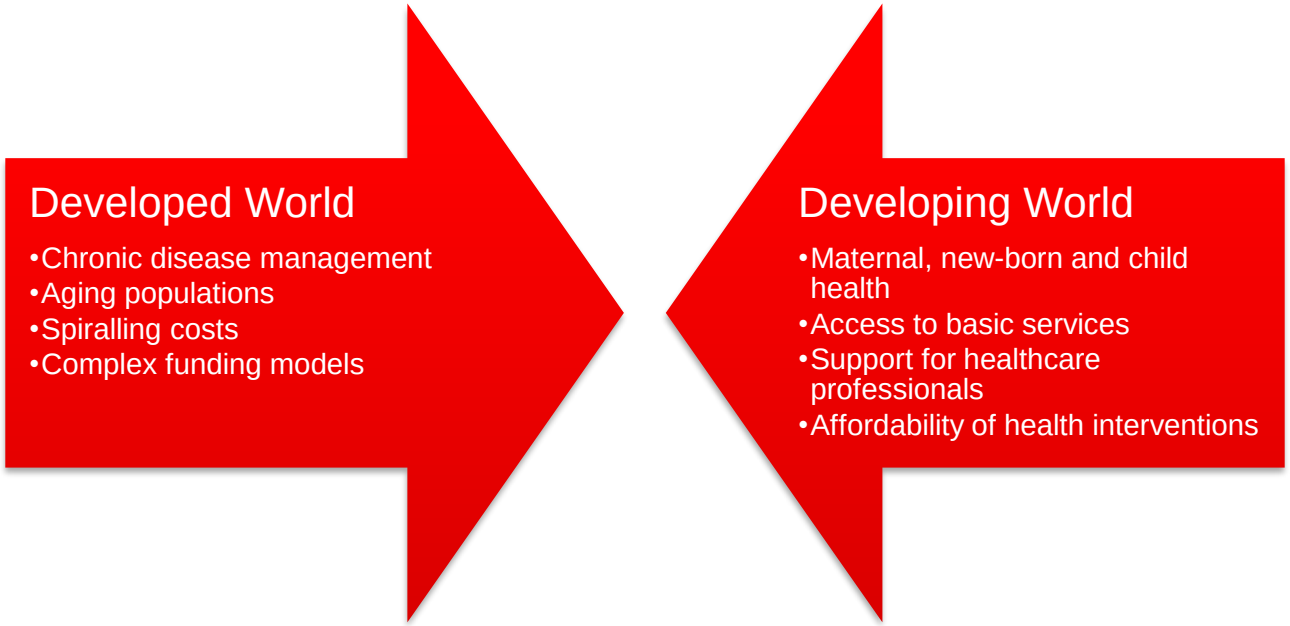
The pressures on healthcare systems worldwide have never been greater due to increasing demand for quality services at more affordable prices

There is growing international evidence that mobile solutions can improve both the quality, delivery efficiency and affordability of care

Significant policy and regulatory barriers must be overcome before these solutions can be fully integrated into the health system

Different challenges for healthcare delivery

Mobile has a role to play in the delivery of healthcare solutions globally, but the challenges in developing markets are very different to those in developed markets.

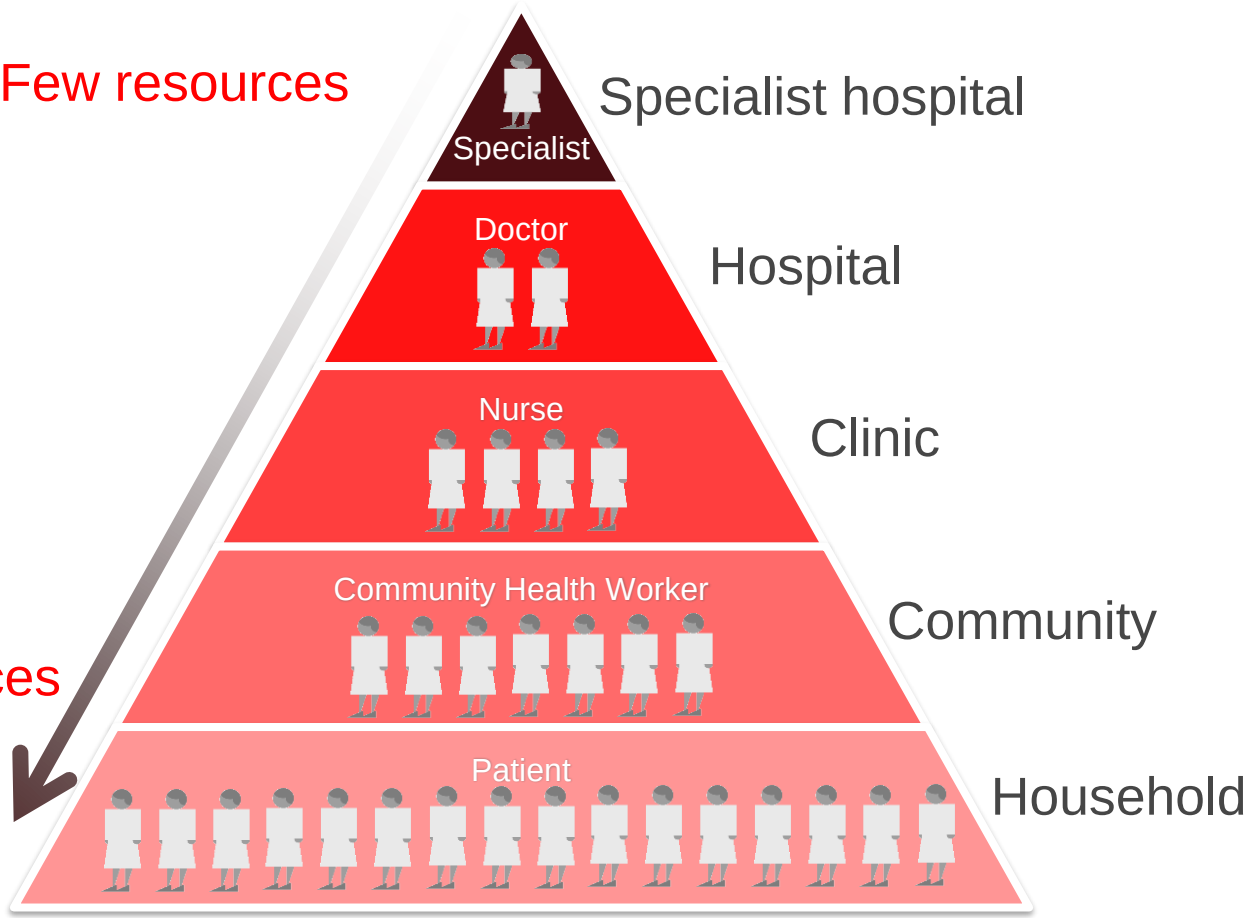


Shift towards decentralisation

Healthcare is shifting from expensive, over-crowded and under-resourced hospital-based care to a decentralised delivery model.

Decentralised healthcare aims to:

- Support demand for services at the base of the delivery pyramid
- Increase access to quality information and services at affordable prices



Potential of mHealth solutions

Service area	HEALTH CONTENT	REGISTRATION	HEALTH WORKERS	SUPPLY CHAIN	ADHERENCE, MONITORING
Outcome	Increases knowledge and behaviour change Supports demand for services	Create SIM based health registration (health identity)	Improves quality and efficiency Extended hospital services	Improves supply chain and logistics	Increases drug adherence Innovative and cost-effective diagnostics
Example					
Commerce	Health tips/content Health value added services Health incentives	Pregnancy registration Patient records	Job aids Household surveys Data collection	Stock outs Facility management Drug authentication	Treatment reminders HIV diagnostic Referrals
Data					
Connectivity					
Billing					

The critical need for regulation

Worldwide, total healthcare spending exceeds $6.5 trillion, accounting for around 10% of GDP in OECD countries. This is increasing at an average of 5% every year.

However, this spend is highly skewed. The top 20 healthcare consuming countries spend nearly 90% of this $5.2 trillion, yet contain just 16% of the world's population.

The US alone, with 5% of the population, is responsible for over 45% of this spend.

The 'have-nots'— the remaining 84% of the people on the planet — share just 11% of health spending, but suffer from nearly 95% of the diseases.

Regulation needs to respond to regional challenges

The wide disparity in spend means that challenges faced by healthcare systems are somewhat different in the developing and developed world.

Despite the considerable growth in the number of mHealth services there is still a poor understanding of how to create value for both health provider and mHealth supplier in a scalable and sustainable way.

An enabling (regulatory) environment is required to formally promote the integration of mobile into healthcare systems.

Current regulatory environment

Without a clearly defined, enabling regulatory environment that's supported by strong proof points, health buyers (Governments and 3rd party providers) are unable to incorporate mHealth services into their budgets.

Healthcare lags significantly behind other industries when it comes to embracing the use of electronic information; there are limited/ inefficient channels on a community level or even regional level which hinders progress of data collection on a national level

Healthcare workers are bound by their regulatory bodies who are slow to adopt new technologies, further exacerbated by budgetary issues and a lack of information on positive benefits for new technologies. Also deprioritised after elections.

Sharing information across care geographies is the exception rather than the rule, and this affects continuity of care

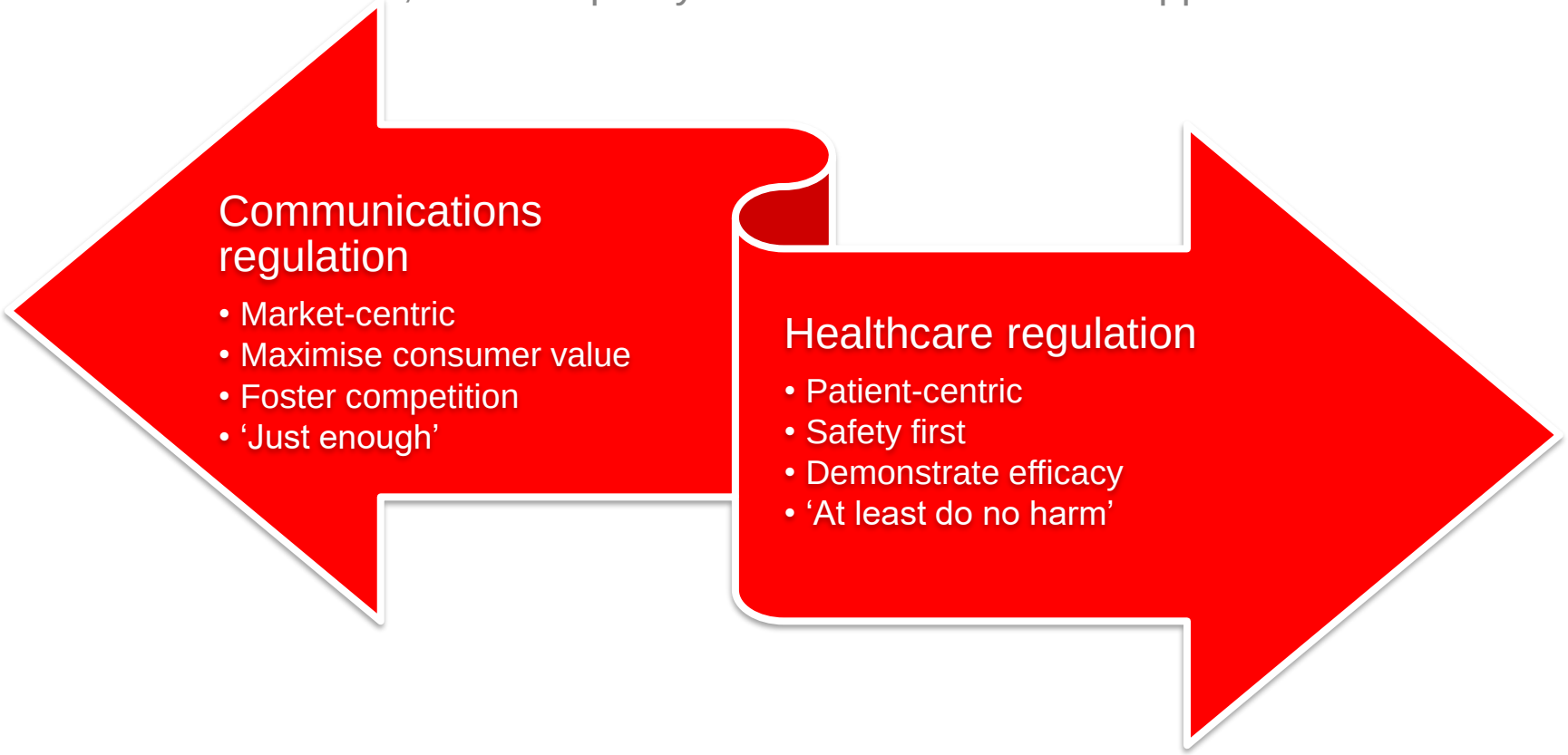
There are laws that hinder, or even prohibit, the use of electronic communications for healthcare

Rules regarding privacy and security are unclear, unevenly applied or unduly burdensome

Common technological standards and interoperable approaches are needed to support an open and patient-centred system

Harmonising two cultures

Regulatory issues arise in mHealth largely due to different regulatory motivations. To support innovation, drive adoption and achieve commercially sustainable economies of scale, mHealth policy needs to combine both approaches.



Boundary issues

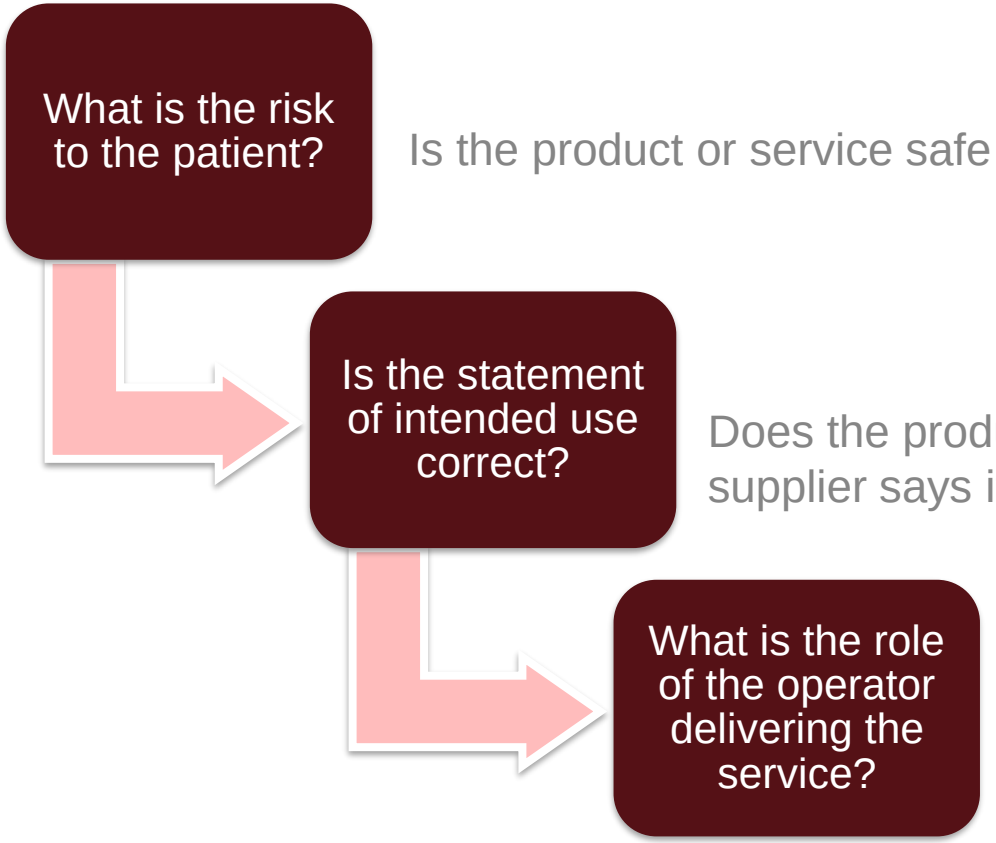
Regulators are currently grappling with boundary issues.

- Prevention (content VAS) requires little/no regulation, but what are the boundaries when suppliers start offering diagnostic services?
- Does a patient need to be seen face-to-face to be diagnosed?
- What medico-legal risk does the mobile operator assume?
- Is the network that supports the handset a medical device?
- Should mHealth mobile apps be classed as medical devices?

Ultimately, the safety of an mHealth device or service can only be fully understood by taking into account the end-to-end system of which the device or service is a component.

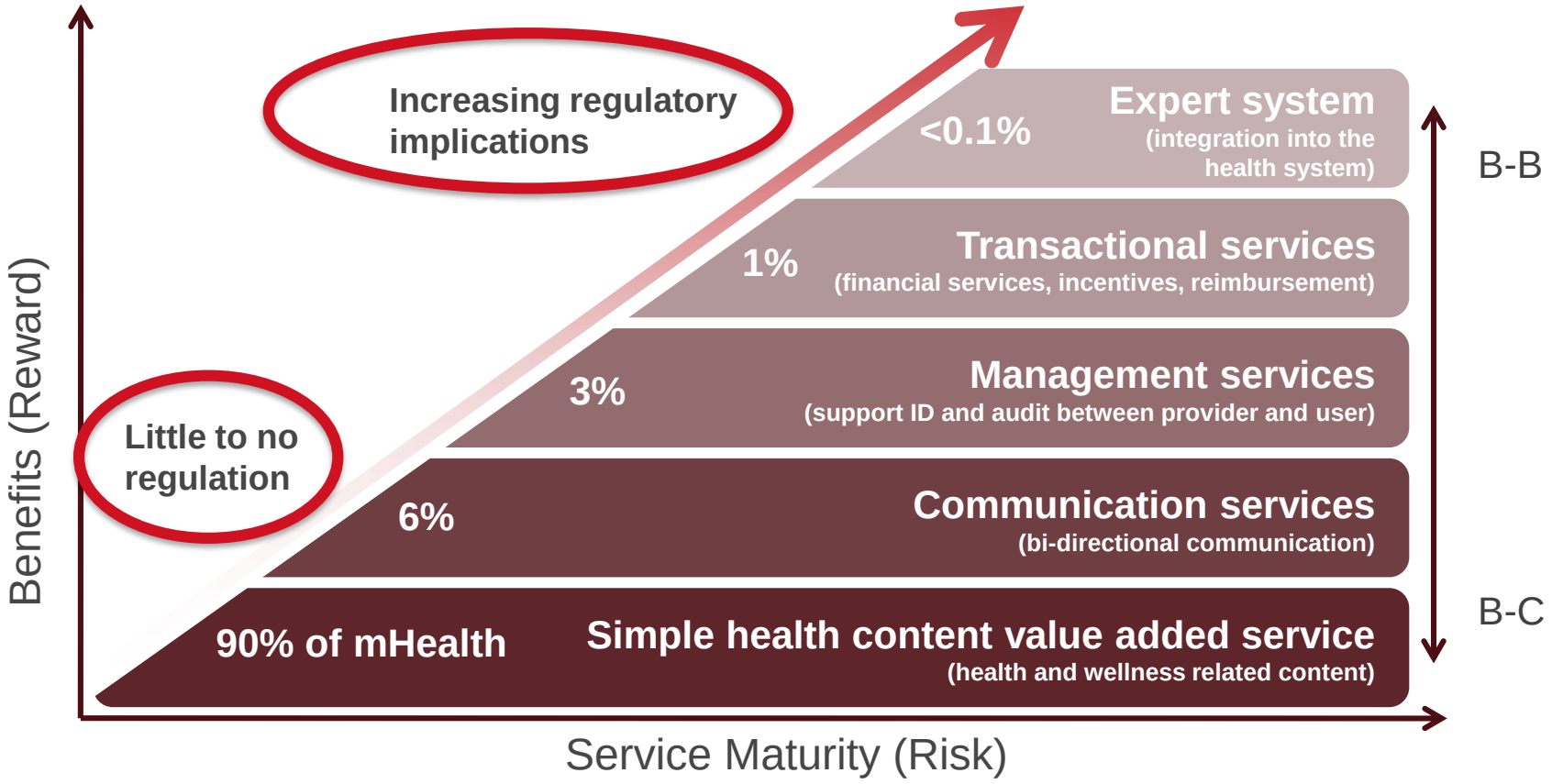
Healthcare regulatory implications

The healthcare regulatory implications of a specific mHealth solution depends on three key questions:



Regulation increases with risk

The higher we climb in the value chain, the more the medico-legal risk and therefore regulatory intervention.



Key considerations

1. Does a country have a national electronic strategy?
2. Is the national electronic strategy standalone or embedded into broader healthcare legislation?
3. What is the role of the Government in the traditional medical device and pharmaceutical sector – fully regulated, guided market, free market or combination of these approaches?
4. What is the end-user's constitutional right to healthcare, privacy, consumer protection and other similar issues?
5. What are the implications of data protection legislation?
6. What are the implications of legislation that governs electronic signatures and/or transacting?
7. What are the applicable ICT privacy and security legislations?
8. Are there limitations of service provider liability?
9. Do local regulatory bodies exist that govern electronic and mHealth, and how actively are they supporting growth of the industry?

Example: Privacy and Security

A move towards mHealth services will blur boundaries as there will no longer be one body with complete control of the end-to-end system. Instead it will evolve into a more open system with multiple players and services. This raises some key questions for regulators:

How will regulators treat stakeholders who are not explicitly subject to telecommunications or e-privacy regulations?

Will patients be able to roam across borders and expect consistent delivery of health information services? Will there be common standards protecting their privacy?

What happens if existing stakeholders want to outsource services to countries with no formal data privacy laws?

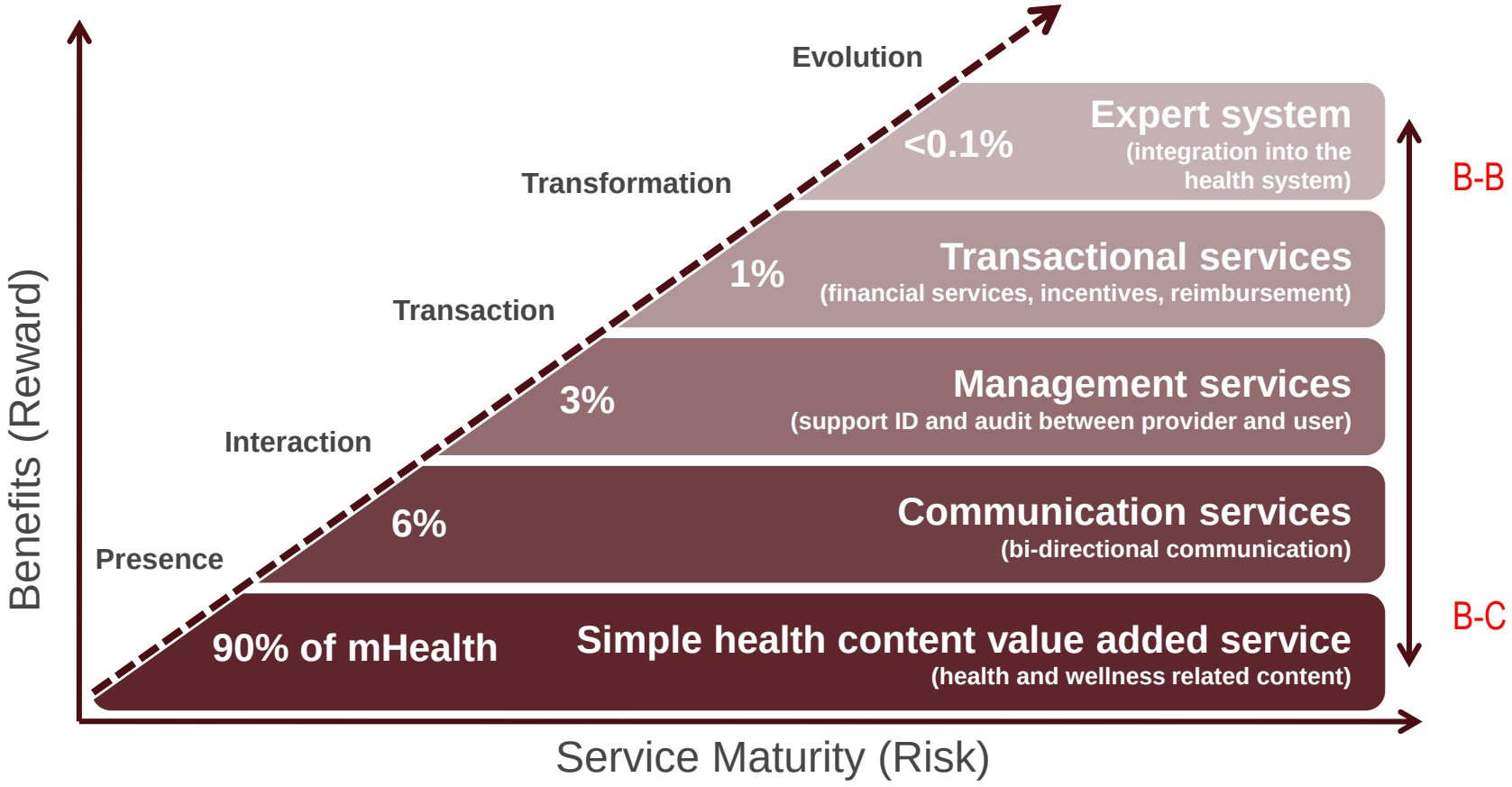
Governments will need to define how regulations apply in an open ecosystem and create a level playing field across all aspects of mHealth.

Ideal policy and regulatory landscape for mHealth to thrive

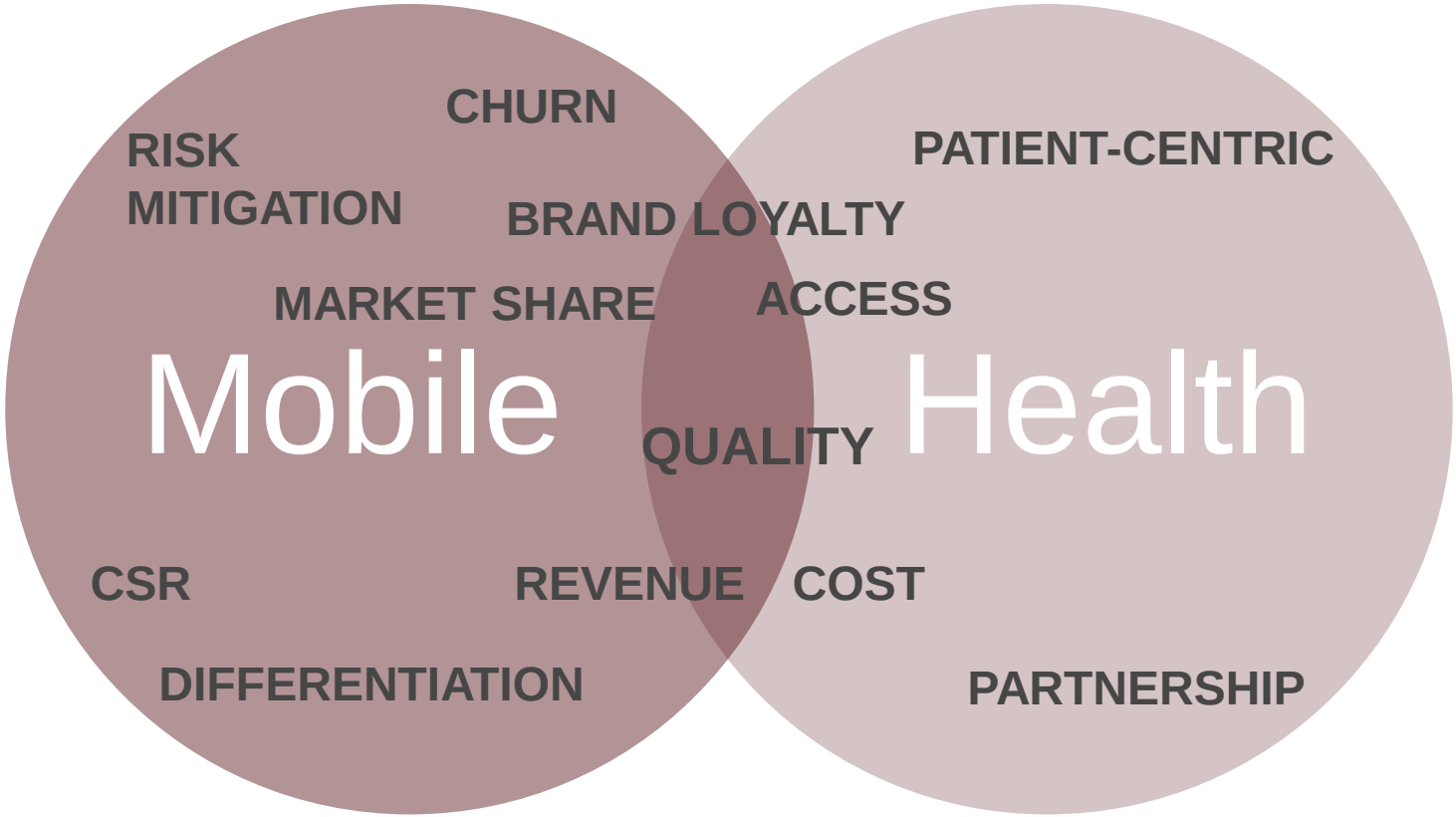
Policy Issues	
Patient empowerment	Reimbursement
Policies promoting out of health facility care and/or greater user autonomy to drive mHealth adoption	A move towards reimbursement that rewards positive health outcomes and supports innovation

Regulatory Issues	
Devices	Systems and interfaces
Proportionality in regulation for what constitutes a medical device and how it is classified	Modularity in regulation encouraging innovation and competition

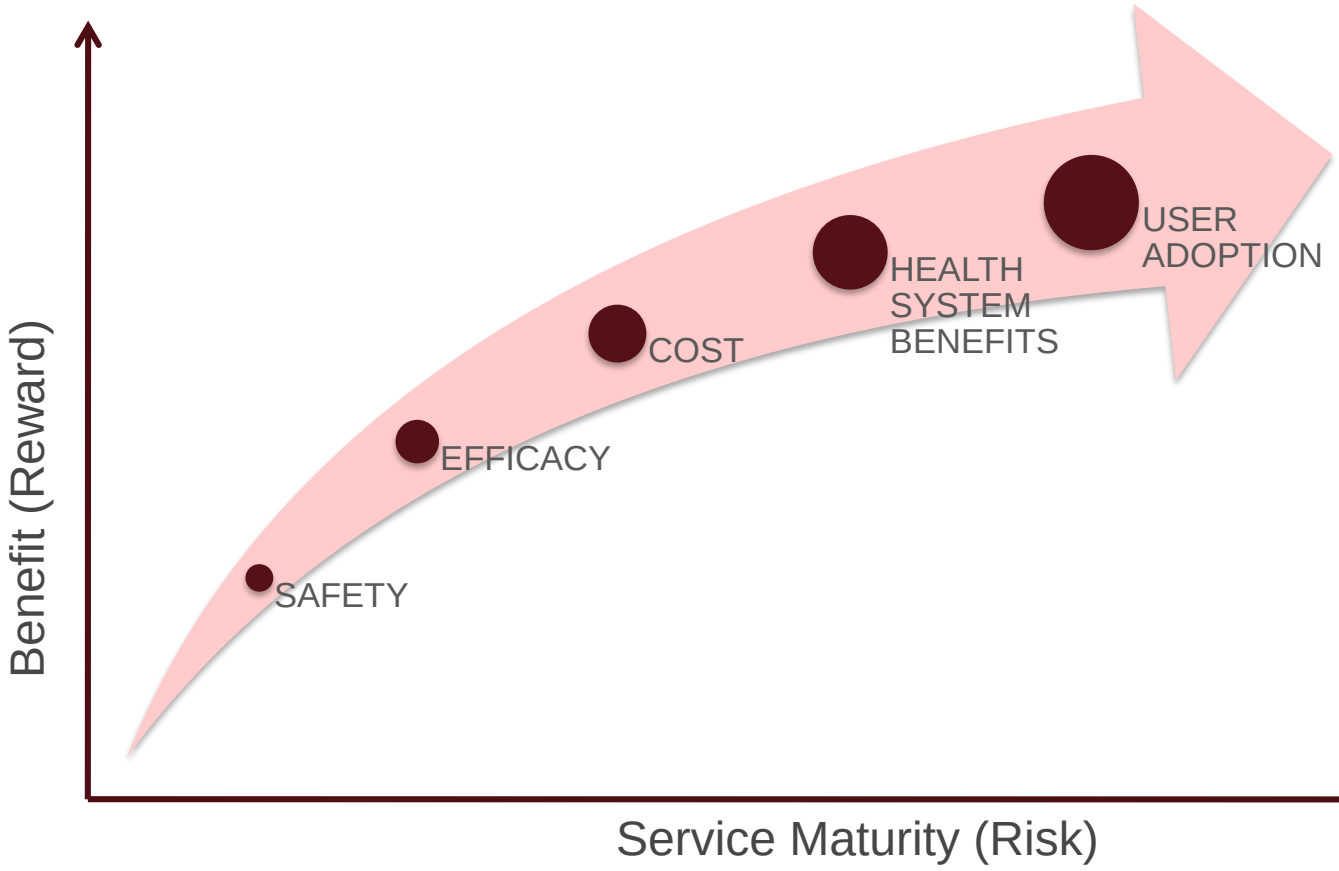
More revenue higher in the value chain



Success requires value creation



Value is dependent on strong proof points



Proof points enable decision making

Stakeholder	Evidence required	Key Decision
Regulators	Risk Safety	Market authorisation and endorsement
Medical professional	Cost comparison Clinical evidence Ease of use	Cost assessment Development of clinical guidelines
Payer	Value for money Health system benefits	Reimbursement Eligibility for treatment
Healthcare provider	Clinical outcome Cost effectiveness	Adoption of new interventions
User	Usability Preference	Utilisation of mHealth

An enabling payment environment

Effective use of mHealth solutions and mobile ecosystems enables increased access to quality healthcare at more affordable prices

Global initiatives and references

Healthcare policy reforms are a crucial enabler for the adoption of mHealth. Governments and industry are already taking positive steps in this area and developing specific initiatives, for example:

- Most emerging markets do not have formal medical device and pharmaceutical regulatory authorities, so they look to the Federal Drug Administration (FDA) and the Conformité Européene (CE) for guidance. As a result, the FDA is now able to evaluate medical applications and CE authorities have draft guidelines for certification in place
- The WHO has a dedicated eHealth portal which has information on eHealth governance & national eHealth strategies amongst other topics
- An increasing number of emerging market countries now have a national eHealth strategy in place
- In the US, a proposed bill that promotes remote diagnosis and prescribing of medicines through more effective payment policies will significantly reduce reimbursement barriers
- Tanzania implemented a national eHealth strategy in 2013, which has seen the rise of flagship services such as Wazazi Nipendeni. The government has also invested in a health platform which in the future will be used to provide mHealth services other than Maternal and Child Health services
- Rwanda also have a very strong eHealth strategy. They have been at the forefront of innovation piloting projects such as drone delivery for blood supply. They are also working with telemedicine company Babylon who have assisted the government in drafting legislation on telemedicine.

Bangladesh: Aponjon

- Aponjon is an mHealth service that offers advice and support to new and expectant mothers in Bangladesh
- Following a 12 month pilot, it was launched nationally in December 2012 by Bangladeshi social enterprise, Dnet, in partnership with the Bangladeshi Ministry of Health and Family Welfare
- Since launching, it has grown to serve more than 500,000 mothers and families and trained over 3,000 community agents and brand promoters who raise awareness of the service and assist subscribers in signing up
- Information is delivered twice weekly in one of two forms: SMS or 60-second voice messages
- The service costs two taka ($0.02) per message, but aims to provide the messages free to at least 20 percent of the poorest subscribers
- It is also exploring the development of higher-end apps (for better off users) that could help cross-subsidise the basic service.

Source: http://www.mobilemamaalliance.org/mama-bangladesh

Tanzania: Wazazi Nipendeni

- A content VAS that has sent out over 32 million healthy pregnancy and early childhood care messages to 425,000 active users
- Airtel Tanzania supports the service through ‘zero rating’ text messages for its subscribers, since its launch in November 2012
- Since mid-2014, Vodacom Tanzania, Tigo Tanzania, and Zantel (Etisalat) are also zero rating messages
- Operators benefit from an increased number of SIMs in circulation and standard SIM-based registration requirements, defined by health regulators

Source: IDF.org

Nigeria: m4Change

- Includes a mobile conditional cash transfer to incentivise pregnant women to attend antenatal care
- m4change is implemented in over 30 health facilities, serving approximately 11,500 pregnant women and new mothers
- There are an increasing number of mHealth services that include a mobile money component
- Payments are typically made for transport to health facilities, micro-insurance, or to create incentives around taking medications, attending clinic visits and completing immunisation schedules
- Strong leadership from the Nigerian Ministry of Health to drive interoperability with the banking and mobile sector

Source: IDF.org

Lunch: 12:00 – 13:00

Session 8: Connected Women

200 MILLION FEWER WOMEN

than men own a mobile phone across low- and middle-income countries

*GSMA 2015 BRIDGING THE GENDER GAP

WOMEN USE PHONES LESS FREQUENTLY AND INTENSIVELY THAN MEN,

especially mobile internet and mobile money.

MOBILE CAN HELP EMPOWER WOMEN,

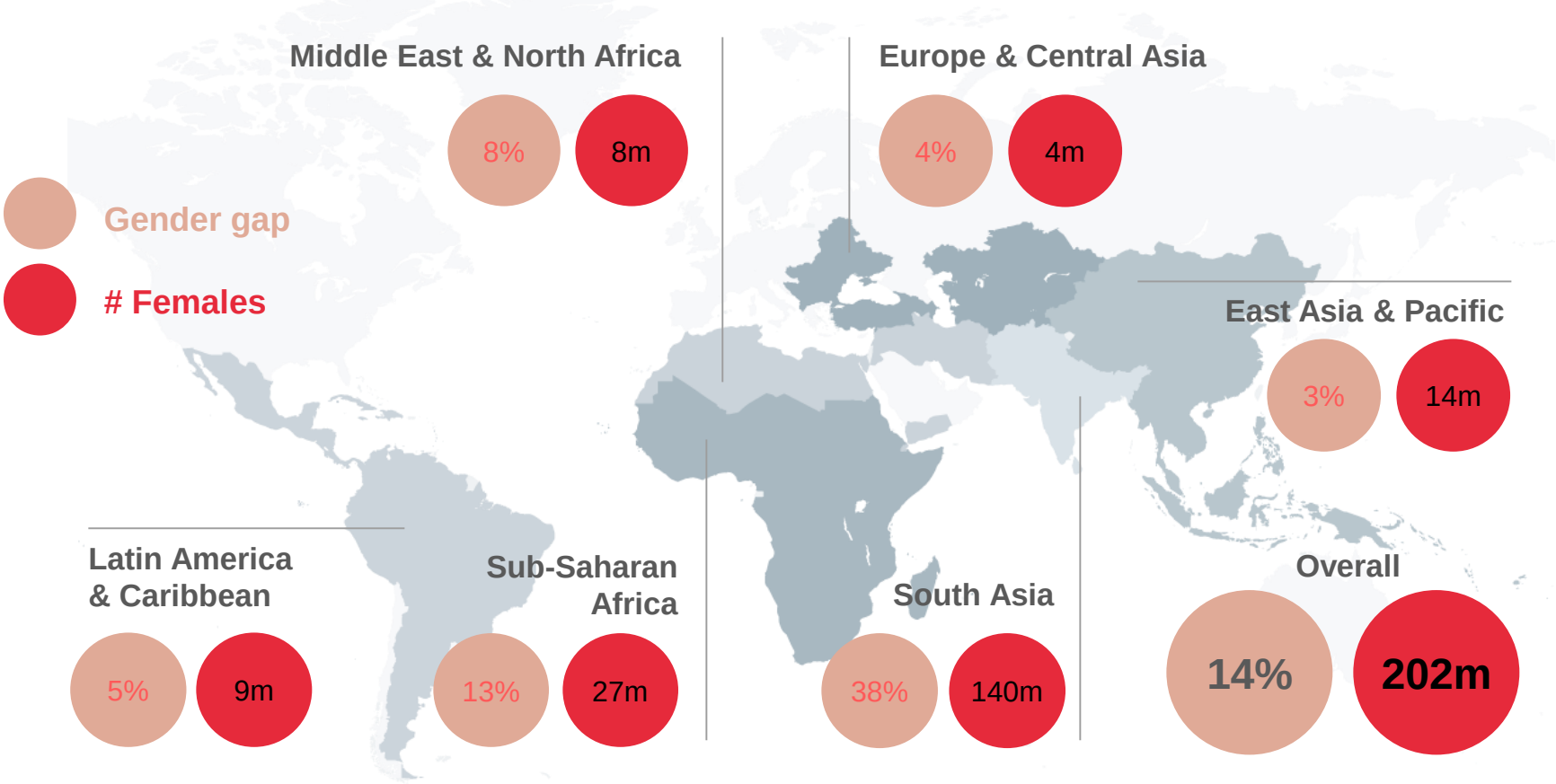
making them more connected, safer, and providing access to information and life-enhancing opportunities.

Mobile supports the **SUSTAINABLE DEVELOPMENT GOALS** especially **NUMBER 5**

"to achieve gender equality and empower all women and girls"

Gender gap in mobile phone ownership in low- and middle-income countries

Gender gap in ownership by region (%, absolute number of females)



Source: *"Bridging the gender gap: Mobile access and usage in low- and middle-income countries", GSMA, 2015*

Gender equality is critical – and mobile can be an enabler for this

Bridging the gap can be achieved by:

- educating girls
- increasing literacy rates among women
- increasing early childhood development interventions
- increasing women's labour force participation and strengthening labour policies affecting women
- improving women's access to credit, land and other resources
- promoting women's political rights and participation
- expanding reproductive health programs and family support policies

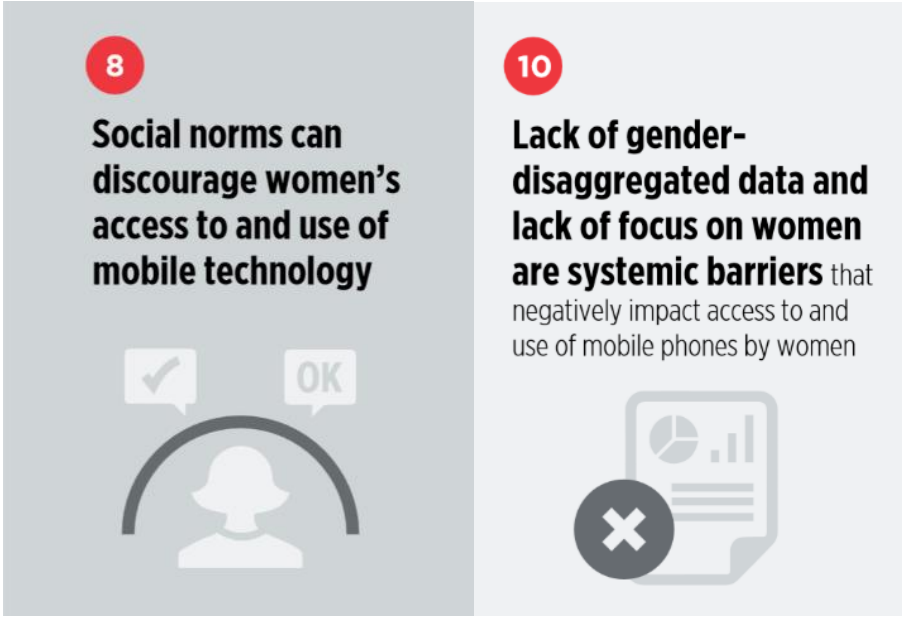
The opportunity

Closing the gender gap in mobile access and use: **$US 170 billion** revenue opportunity (2015 – 2020)

The Barriers

Top barriers preventing women from owning and using mobile phones

1. Cost
2. Network quality and coverage
3. Security and harassment
4. Operator / agent trust
5. Technical literacy and confidence



Connected Women Commitment Initiative

Mobile operators are making formal commitments to reduce their mobile internet an/or mobile money gender gap in a specific low- or middle-income market(s)

"We commit to increasing the proportion of women in our [mobile internet customer base/mobile money customer base] in [country] from [x%] to [y%] by 2020"

What can you do?

Our top 3 recommendations for development community

Embed activities that **drive women's mobile access and use** in your initiatives

Invest in **consumer insights research** to better understand women's mobile access and use and how to reduce the gender gap

Raise awareness of the barriers to women's mobile access and use

Our top 3 recommendations for policy makers and regulators

Ensure **appropriate policy and regulation** to lower access barriers for underserved customers

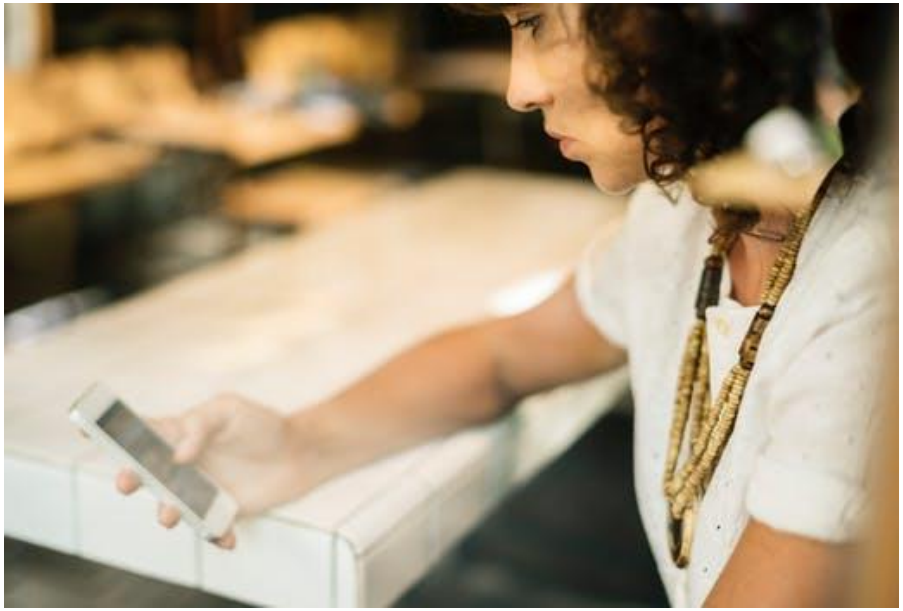
Promote **gender equality in education** and improve digital literacy for women and girls

Improve women's safety on mobile through effective policies and strategies including legal frameworks and awareness campaigns

Why are women not being reached?

Underlying social norms, gender inequality issues and the cost of mobiles are preventing more women from using phones.

- The mobile gender gap is largely due to gender inequality in society
- Women tend to have lower levels of education and skills, as well as lower socio-economic status
- High taxes on mobiles and mobile services put them out of the reach of most women, as they simply make them unaffordable



Addressing cultural barriers

There are also many cultural barriers that stand in the way of women using mobile phones and services.

- Women are often financially dependent on men or do not have control over economic resources, which makes accessing ICT services more difficult
- Allocation of resources for education and training often favours boys and men resulting in lower levels of literacy and education, including training in languages which are predominantly used in ICT platforms and the internet
- In some societies, women are barred from public places making access to public calling offices, community telecentres or internet kiosks difficult

Session 9: Disaster Response and Recovery

Disasters are increasing in frequency and magnitude

- Disasters are becoming increasingly common and have a greater impact on larger numbers of people due to a range of factors including:

- Climate change - Demographic change - Population growth - Urbanisation

Capacity Building

Disaster Response

Programme aims:

- Drive scale and collaboration within the mobile industry to increase and demonstrate the positive social impact of mobile operators and partners before, during and after humanitarian emergencies.

- Support the mobile industry, under the banner of the Humanitarian Connectivity Charter, in improving network preparedness and restoration, and providing more effective, coordinated support to humanitarian responders and disaster hit populations.

Mobile now a basic humanitarian need in times of crisis

"You may wonder, well, what's a 130-year-old institution like the Red Cross doing in the new world of mobile technology? But we are seeing it literally revolutionise disaster response."

- **Suzy DeFrancis, Chief Public Affairs Officer, American Red Cross**

". . we are gaining a better understanding of the potential our networks have to play a supportive role both during and in the aftermath of a crisis. Enabling affected communities, governments and aid workers to access the internet, make a phone call or send a text is a vital part of crisis management and the humanitarian response which follows."

Dr Nasser Marafih, Group Board Member and ex-CEO, Ooredoo

"I congratulate the GSMA and its membership for developing this partnership (the Humanitarian Connectivity Charter) with the humanitarian community, which will enable people affected by crises to gain access to vital communications."

- **Ban Ki-Moon, Secretary-General, United Nations (2007 - 2016)**

There are numerous touch points for regulators within the area of disaster response

Preparation

Response

Long-term recovery

Opportunities and challenges for regulation

At its best, regulation can create an enabling environment that supports rapid recovery after a disaster.

At its worst, it can inhibit recovery efforts and prolong the recovery period reducing the benefits associated with mobile communication for affected communities.

Positive collaboration opportunities

Regulators have an important role to play

Input from regulators is welcomed by many operators

There is a real opportunity to improve the mobile industry's response during times of crisis

Activity

Group discussion

What are the challenges, in terms of disaster and crisis preparation and management, facing mobile operators in this region?

How could policymakers and regulators work with the telecommunications industry to increase disaster preparedness and resilience in the region?

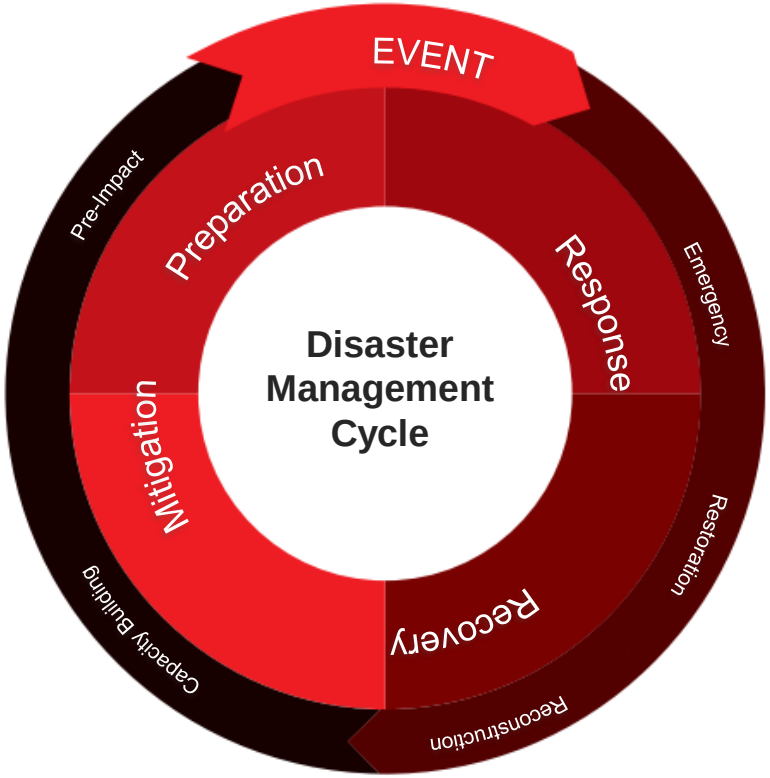
Disaster response planning

"Plans are worthless, but planning is everything. There is a very great distinction because when you are planning for an emergency you must start with this one thing: the very definition of 'emergency' is that it is unexpected, therefore it is not going to happen the way you are planning."

- **Dwight D. Eisenhower, President of the United States 1953 - 1961**

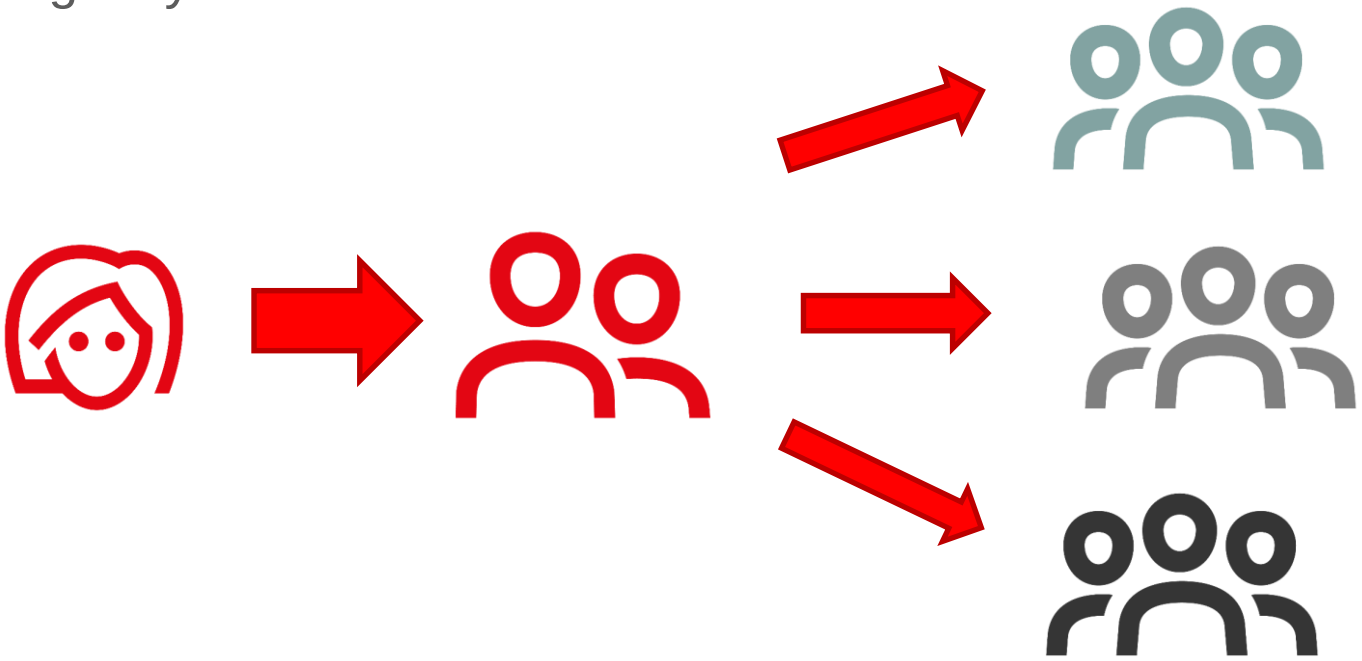
Disaster response planning

- Planning responses to disaster saves lives and speeds recovery.



Key government agencies

- Knowing which agency is in charge of each regulatory area of concern during an emergency is critical — and not obvious once an emergency occurs.



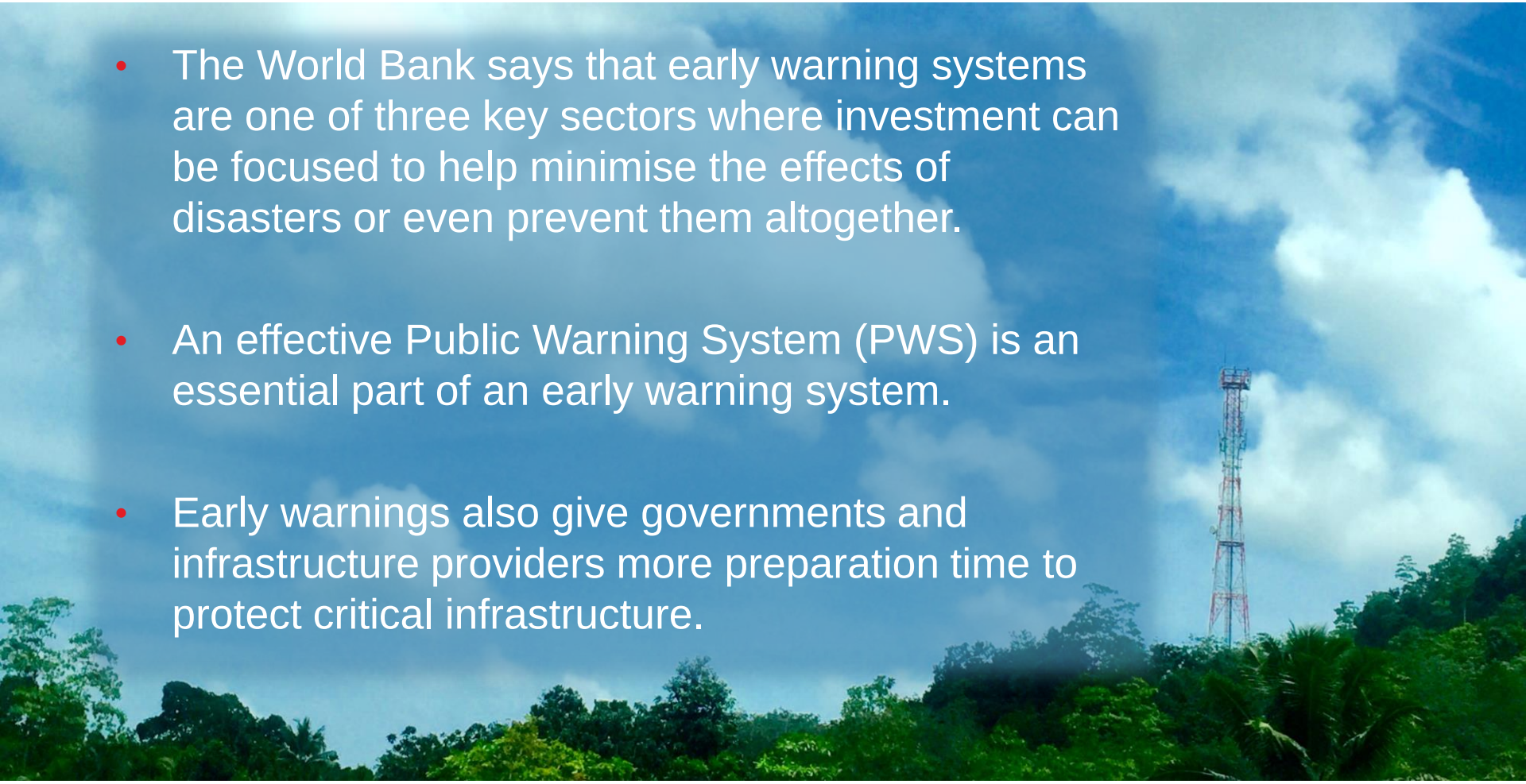
The importance of preparation ahead of time

- It’s important that all areas of regulation that have an impact during disasters are discussed by government and operators ahead of time.

- Discussions may need to include how mobile-based early warning systems will operate and how they can align with official information delivery via other media such as radio and TV.

- There may also need to be agreement on national short codes that can be used during emergencies.

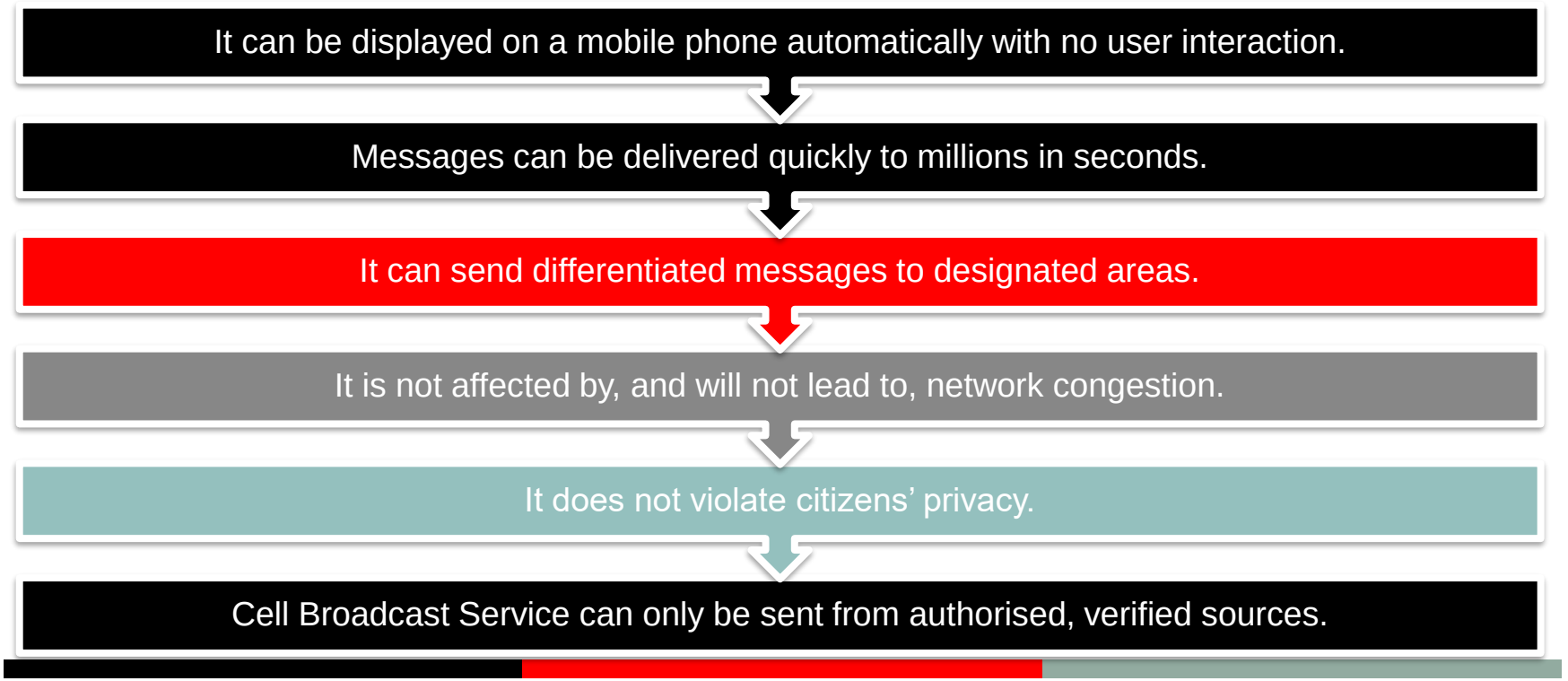
Early warning systems can be key



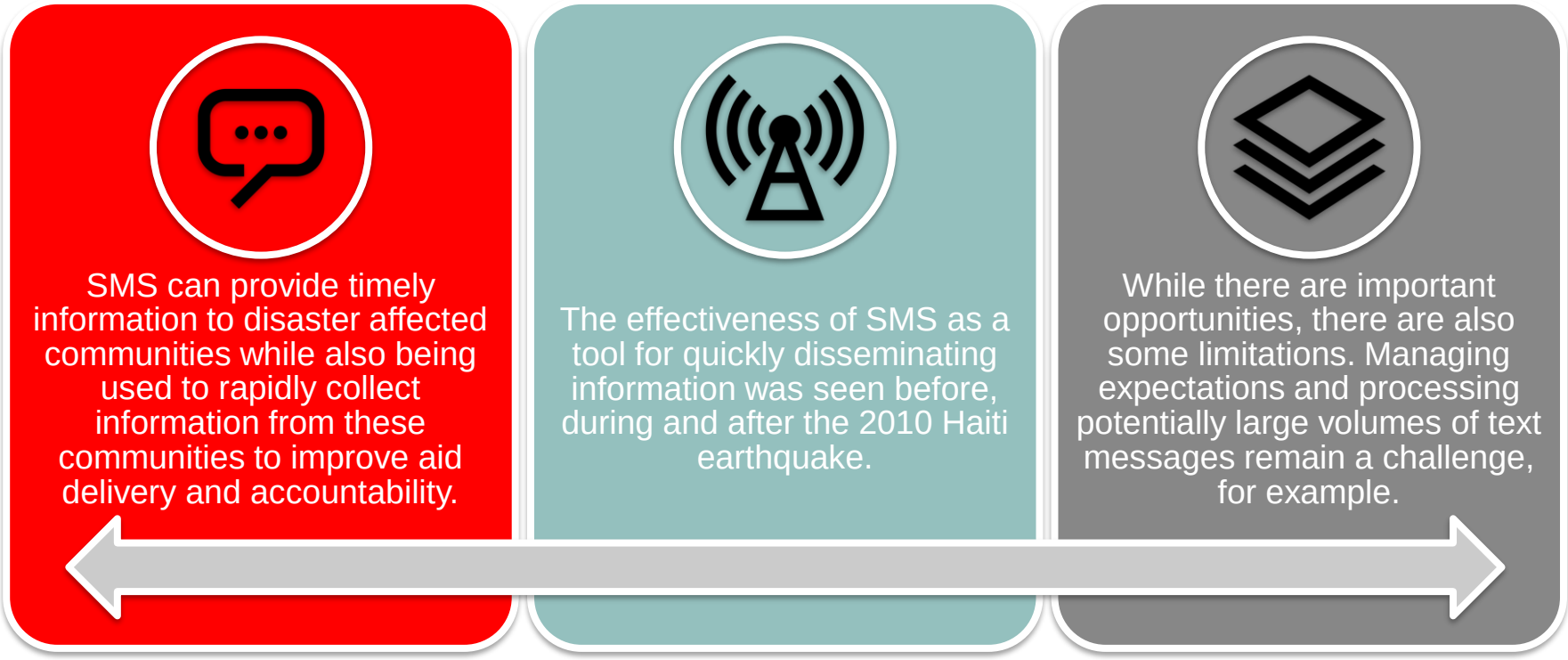
- The World Bank says that early warning systems are one of three key sectors where investment can be focused to help minimise the effects of disasters or even prevent them altogether.
- An effective Public Warning System (PWS) is an essential part of an early warning system.
- Early warnings also give governments and infrastructure providers more preparation time to protect critical infrastructure.

Advantages of cell broadcast for early warning

- Cell Broadcast Service has a number of practical advantages that make it suitable for disaster alert and warning systems:



Use of SMS in disaster response



Guidelines for using SMS during natural disasters

Consider whether SMS is the most appropriate vehicle for the information you are trying to disseminate or collect.

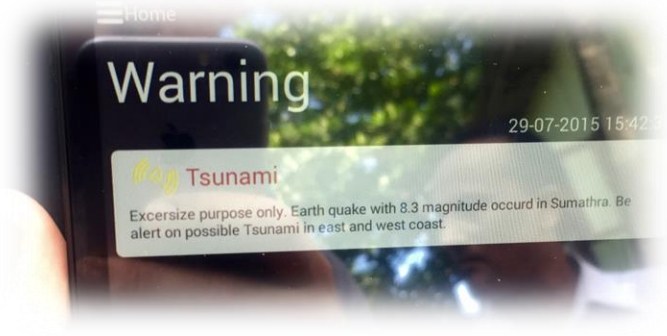
Do not launch an SMS service unless you have the ability (and capacity/resources) to act on incoming information.

Consider the solid and coordinated partnerships that are required to make an SMS service successful.

Design with the end user in mind.

The humanitarian principle of ‘Do No Harm’ comes first.

Case study: DEWN



The key issues:

- The Indian Ocean Tsunami of 2004 resulted in the loss of approximately 35,000 lives in Sri Lanka alone. Local economies were devastated and many communities that rely on fishing and tourism are yet to fully recover.
- There was a window of approximately 90 minutes between the earthquake and the arrival of the waves on Sri Lanka's east coast and an even longer period until it hit the west coast.
- A warning delivered 90 minutes ahead of the impact would have enabled many people to get to safety on higher ground.
- Some estimates indicate that around 85 per cent of lives lost in Sri Lanka could have been saved if such a system was in place in 2004.

Case study: DEWN

The approach:

- Many staff members at Sri Lankan mobile operator Dialog Axiata were impacted by the disaster, with family members or loved ones included in the lists of casualties and injuries.

- For staff members working in technology and innovation, the scale of this disaster led them to investigate ways mobile technology could be used as an effective early warning mechanism.

- These ideas led to the development of the Disaster and Emergency Warning Network (DEWN). This initiative was spearheaded by project partners Dialog Telekom, as Dialog Axiata was then known; Microimage, a software company; and the Dialog-University of Moratuwa Mobile Communications Research Laboratory.

- The DEWN project began in 2006 and the system became operational on 30 January 2009 after a successful pilot.

Case study: DEWN

The outcomes:

- Messages can be received on basic cell broadcast-enabled 2G handsets, smartphones via a downloadable Java app and a dedicated DEWN device that is designed for use in public spaces and which includes an embedded SIM.

- The service uses the cell broadcast functionality of Dialog's network, but warnings can also be delivered to other local providers that don't support the cell broadcast service so they can disseminated the information via bulk SMS.

- DEWN is used first to alert emergency personnel on their individual phones. Public alerts are issued only when a threat is adequately verified, thereby reducing false alarms.

- The Sri Lankan National Disaster Management Centre chose DEWN as its key tool for its five-year plan implemented in 2014.

Case study: Maldives water crisis

The key issues:

- On the 4th of December 2014, a fire broke out at the Malé Water and Sewerage Company generator unit resulting in 150,000 people in Maldives' capital Malé losing access to drinking water.
- Government bodies acted quickly to distribute bottled water, but supplies were limited and stocks quickly dwindled.
- With a critical water shortage affecting a third of the nation's population, the government declared a State of Emergency.
- As the Maldives National Defence Force (MNDF) began to work to distribute available water in Malé, water shipments were dispatched from China, India and Sri Lanka, as well as via SriLankan Airlines.

Case study: Maldives water crisis

The approach — phase one:

- As news of the crisis broke, the business continuity management (BCM) team within Ooredoo Maldives activated the internal disaster response business continuity plan.
- An email was sent to all staff explaining the situation and putting out a call for volunteers. Once activated, volunteers were able to use a pre-existing short code to get information about volunteer activities and the wider response.
- The sudden onset of the crisis, a new type for many Maldives residents, meant that a lack of information risked contributing to rumour and worry among the impacted population.
- An existing SMS short code, traditionally used for subscribers to find out about new services, was repurposed to become a water crisis helpline.

Case study: Maldives water crisis

The approach — phase two:

- Bottled water arriving on the island was distributed by truck. Demand far exceeded supply. Much of the population had to spend long periods of time queuing and waiting for water trucks to arrive.

- Ooredoo Maldives created a solution that combined its M2M service - Locate - with cell broadcast and Interactive Voice Response technology to communicate information about the location of the water trucks.

- Maps of the water drop off points, as well as information on the expected timetables, were shared via SMS, IVR and social media. The Locate system was added to each water truck cabin so the location of trucks could be shared via a live map.

- The Ooredoo team supported NGOs by providing access to free coding as well as hosting applications on a single, bespoke platform.

Case study: Maldives water crisis

The outcomes:

- Ooredoo Maldives was able to act so decisively because eight months earlier its BCM team had proactively created a framework plan for use during a national crisis.
- The response to the crisis was seen as very positive and efficient, but Ooredoo Maldives also learned much from the experience.
- For example, the firm now believes mobile networks should be included in the national emergency committee meetings as they are key communications providers.
- Ooredoo wants its internal IT department to be more closely involved in BCM to ensure that responses have the internal technical support needed.
- The BCM team also found that translating the crisis management plan from paper into real-life situations highlighted challenges that were not previously identified.

Activity

Core Problem Solution Design

As a government employee, mobile network operator, innovator, and/or civil society stakeholder who is concerned with addressing ICT challenges in Vanuatu, you will design a solution based on your Core Problem from Day 1.

Activity

Core Problem Solution Design

As a group, with a facilitator taking notes, brainstorm:

- How you would design this solution?
- How can you make your design and solution socially sustainable?
- How can you make your design and solution economically sustainable?
- How will policy and regulation inform your design?

- Prepare a **short** presentation that informs the audience about your solution design and the policy and/or regulatory mechanisms that accompany it. You will have 60 minutes to prepare your presentation!

- You will have 10 minutes maximum to deliver the presentation on your solution

Feedback Forms
and
Presentation of Certificates

Day 2 Close