



Public Policy Annual Review 2012





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Describing the work of the GSMA to ensure that the interests of the global mobile community are effectively represented in the public policy debate.

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Foreword

Mobile connectivity has become fundamental to daily life. Across the developing world, mobile devices and networks are generating economic growth, connecting people and businesses to each other and, increasingly, to health, education and financial services. In the developed world, smartphones have gone mass-market and ordinary people now have continuous access to the entire Internet, enabling them to watch videos, listen to music, check in with friends and family or pull up information with one touch of a screen.

At the same time, many more devices, vehicles and machines are shipping with built-in connectivity. Health monitors can use mobile networks to transmit patients' vital signs to hospitals, cars can automatically call the emergency services in the case of an accident, tablet computers can download books from almost anywhere and "home hubs" enable householders to control their heating, air conditioning or lighting during their daily commute. All these services, and others like them, enrich peoples' lives, cut costs and often lower greenhouse gas emissions. Together, they greatly enhance the emerging digital economy.

Of course, pervasive connectivity depends on extensive and robust telecoms networks, which in turn, depend on investment. The global telecoms industry is spending more than US\$300 billion a year on capital projects, expanding coverage, enhancing services and creating jobs. In fact, booming demand for mobile broadband is one of the few bright spots in the gloom that hangs over the global economy.

But realising the full potential of mobile broadband and the mobile Internet depends on network capacity and ultimately the supply of spectrum. Mobile data traffic is

growing exponentially, putting networks under pressure in urban hotspots and communities lacking fixed-line infrastructure. Policy makers need to respond by making more spectrum available for mobile broadband services. Moreover, they need to coordinate the harmonisation of spectrum internationally, so that equipment makers can gain economies of scale and lower the cost of devices for consumers and businesses.

Like oil or gas, spectrum is a precious natural resource that needs to be used as efficiently as possible. It is the fuel of mobile connectivity.

Beyond releasing more spectrum, there are several other ways in which governments can help their citizens tap the full potential of mobile connectivity. First of all, they need to ensure that laws and regulations are fair, up-to-date and reflect the fact that the mobile Internet is a global phenomenon in which a huge variety of companies are offering competing services across the world. For example, privacy and data protection regulations should be consistent across international borders and across industry sectors. Applying one set of privacy rules to mobile operators and a different set to Internet companies, for example, confuses consumers and curbs competition.

Equally, governments need to ensure that their tax policies encourage adoption and usage of mobile connectivity. Worryingly, the second edition of the GSMA's global benchmark study found the average tax burden on mobile consumers is higher today than in 2007. High taxes on mobile handsets and services are counterproductive and short-sighted – they typically stifle economic growth and in the longer term reduce the overall tax receipts collected by the government.



Policy makers also have a key role to play in encouraging the roll out of services based on Near Field Communications, or NFC, technology, which enables data to be transmitted between two devices within a few centimetres of each other. Mobile handsets with NFC chips can act as electronic tickets, debit and credit cards, keys and discount vouchers, making transactions richer, faster and more efficient, oiling the wheels of the broad economy. Working in partnership, governments and the mobile industry can accelerate the roll out of this new technology to national transportation systems and in-store payments.

In summary, the public and private sectors share a common agenda – people and organisations need to become more 'connected', to make them more efficient, more effective and more productive. With the right support from governments, mobile communications can deliver that agenda, help the world recover from the current economic malaise and build a sustainable and prosperous future. This annual review maps out the practical steps that together the mobile industry, governments and regulators can work together to make that happen.

Tom Phillips,
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Chapter 1

The Mobile Industry – Driving Smart Economic Growth and Social Development

From sluggish economies to climate change to soaring healthcare costs, policy makers face a clutch of seemingly-intractable challenges. In each case, individuals and organisations need to become more efficient and effective – they need to be able to achieve more, while spending less money and consuming less energy. In essence, they need to live and work smarter.

Information and communications technology (ICT) is the key to smart economic growth and social development. ICT depends on connectivity, which in turn depends increasingly on mobile networks – fixed-line penetration worldwide was just 17.2% in 2010, compared with 78% mobile penetration, according to the ITU. Moreover, mobile networks now cover more than 90% of the global population.

Mobile connectivity enables people and organisations to remotely monitor and control a wide range of devices, machines and vehicles, making them more efficient and effective, while enabling the development of innovative and valuable services.

The utilities sector is one of several major industries looking to harness mobile connectivity to improve day-to-day operations. The systematic use of embedded mobile connectivity to create smart utility grids and smart energy environments can improve suppliers' ability to effectively manage demand and improve their customers' ability to use energy and water more efficiently.

At the same time, travellers want smarter vehicles and transport systems that can give them real-time information about traffic jams, weather conditions, road works, parking availability, local retailers and entertainment services. Moreover, governments are calling for solutions to help make roads safer, encourage more efficient and environmentally-friendly driving and assist traffic management and planning. Policy makers are also increasingly calling for vehicles to be equipped with systems that can automatically alert emergency services in the case of an accident or in the case of theft.

Embedding mobile connectivity directly into vehicles (telematics) is the easiest way to meet these needs, while also enabling companies to better track their fleets of cars, trucks and other assets. Moreover, in-vehicle mobile connections open up opportunities for remote diagnostics and in-car infotainment services, such as television, video downloads and Internet access.

In the education sector, mobile connectivity also provides an opportunity to offer new ways of teaching and learning that ultimately will improve performance and results. Mobile networks can increase access to up-to-date materials, enable collaboration and strengthen learner engagement.



Improving healthcare

One of the biggest challenges policy makers face is how to make high-quality healthcare affordable and accessible for all. As the population expands in developing countries and ages in developed countries, the world is spending an increasingly high proportion of its gross domestic product on healthcare. Governments, individuals and private insurers worldwide are urgently seeking more cost-effective ways of preventing and treating chronic diseases and other debilitating conditions.

The widespread use of mobile connectivity in healthcare could significantly cut costs, increase the reach and accessibility of healthcare services and reduce the impact of illness on people's lives.

Benefits of mobile health for patients and society:

- Prevention through continuous care and lifestyle coaching
- Better and faster treatment
- Elderly and ill can live at home rather than in a nursing home or hospital
- Greater life expectancy
- Fewer absences from work
- Lower health insurance premiums and lower public spending on healthcare

Benefits of mobile health for healthcare providers:

- Fewer hospital visits and more efficient use of clinicians' time
- Earlier intervention enabling better and more cost-effective treatment
- Access to more and better information about a patient's condition and lifestyle
- Improved communications with patients
- Better management and understanding of epidemics and diseases

At the end of 2011, the GSMA was tracking 326 live deployments and 141 pilots of mobile health services around the globe. Many of these projects, particularly in the developing world, are having a significant positive impact on local communities. Furthermore, a new report conducted by PwC for the GSMA, called *Touching Lives through Mobile Health*, forecasts the mobile health services market to be worth US\$23 billion by 2017.

However, there is still considerable inertia in the healthcare ecosystem, which could hold back the adoption of mobile health solutions. The overwhelming majority of healthcare expenditure in the developed world is through formalised reimbursement mechanisms (typically funded by governments, insurers or employers). To justify payment, these reimbursement mechanisms generally require consideration of the scientific evidence evaluating the product or service in question. It is, therefore, important to demonstrate to funders and policy makers the positive economic and clinical outcomes generated by mobile health solutions.

Technology and Interoperability

The history and success of the mobile industry is built on the application of common standards. This has been underpinned by a commitment to interoperability amongst multiple network operators and equipment suppliers. The result is a near ubiquitous and largely affordable service across the globe.

In the healthcare sector, the GSMA has identified four key functional areas that could benefit from standardisation:

- **Communications** – the raw communications protocols and services
- **Data and records** – the mechanisms to codify clinical information and also to store this information in an organised health-record format.
- **Identity and Access** – the non-functional components around patient identity, patient confidentiality and consent, and security around the solutions.
- **Service and Application** – the functional healthcare specific application components that interface with existing systems and business functions.

The GSMA is working with its members and other standards and trade organisations (including Continua, COCIR and EUCOMED) to produce reference guidelines on interoperability principles and standards. Due to be published during 2012, this document will also make the case for governments and regulators to partner with industry in stimulating standards-based approaches to mobile health. The GSMA is also providing recommendations on interoperable approaches as a member of the Industry Advisory Board to the European Commission's Renewing Health programme.



Mobile Health in developing countries

In February 2011, the GSMA Development Fund launched the Mobile Health programme to accelerate the creation and deployment of viable mobile health solutions in developing countries. To that end, the GSMA hosted the inaugural Mobile Health Summit in Cape Town in June 2011 in partnership with the Mobile Health Alliance. With over 600 participants, the event provided an opportunity to address challenges in the market and forge new partnerships and innovations to move the industry forward.

In 2011, the Mobile Health team also launched an extensive research programme analysing market opportunities, regulatory barriers, product design, technical architecture and marketing. This has led to the development and publication of several research reports that are available to the operator community as part of the GSMA's *Mobile Health Market Entry Toolkit*.

In 2012, the GSMA will continue its work in the Middle East, Africa and Asia with a specific focus on developing replication toolkits for health information systems and health hotlines. With the Mobile Health Alliance, the GSMA will co-host the second Mobile Health Summit in Cape Town, South Africa at the end of May 2012.

In November 2011, the GSMA, in co-operation with the Qtel Group and Qualcomm, launched the GSMA Mobile Health University Challenge 2011-12, a global competition to highlight key mobile health initiatives taking place within the university community. Participating teams are asked to develop a mobile health concept that will address a specific healthcare need; these concepts could take the form of a business concept or a technology development. Ten shortlisted teams will showcase their ideas at the finals, which will be hosted at the Mobile Health Summit in Cape Town.

The SIM: The Key to Better Healthcare?

In most countries, healthcare information and communications technology (ICT) systems lack a common, open and secure identity management technology. The SIM, (an application running on a Universal Integrated Circuit Card or UICC), could fill this important gap. More than six billion devices around the world are authenticated on mobile networks using a SIM card, which stores and presents a unique identifier for each customer to their mobile operator. SIM-style solutions could provide increased security for, and access to, healthcare providers' ICT systems.

Offering a high level of security and flexibility, the UICC already underpins a growing number of services that enable people to complete transactions at point of sale or send and receive money using their mobile phone. The same technology can also be used to securely store healthcare information, such as a patient ID or National Insurance number, on a UICC.

Healthcare policy and regulation

Medical devices and software are subject to regulations that ensure their safety and effectiveness. Mobile health solutions typically combine devices, software and network aspects into more complex systems. The GSMA is participating in the ongoing debate among industry stakeholders and regulators in the US and the EU on how medical device regulations apply to apps, software and devices in mobile health. In 2012, the GSMA plans to publish *Medical Device Regulation Guidance* for mobile operators to explain how medical device regulation would apply to a set of common mobile health use cases.

Many countries have legislation in place to protect privacy, including specific rules governing health information. It is unlikely that mobile health services require completely new approaches, but it will be important to remove any unnecessary regulatory barriers and ensure legal certainty. There is also a need for consistent approaches to privacy and security across an emerging ecosystem of new players, business models and technologies. The GSMA believes privacy for mobile health is about ensuring transparency, choice and control for individuals in the communication and use of health data.

Regulation and standards

More broadly, the GSMA is reviewing regulation and standards. In the utilities sector, for example, standards are required to enable energy and water suppliers to remotely switch mobile operators without having to physically replace the SIM cards used in smart grid solutions. In 2011, the GSMA launched the Embedded SIM initiative to create a standards-based embedded SIM solution capable of remote management of operator credentials. This solution is likely to be standardised by ETSI in late 2012. The GSMA is also engaged in the standardisation work of the Smart Grid Coordination Group (jointly established by CEN-CENELEC-ETSI).

Early in 2012, the European Commission launched a public consultation on spectrum for wireless technologies with the potential to improve energy saving, such as smart energy grids and smart metering systems.

In the automotive sector, the European Commission is planning to introduce regulation that would make it mandatory for all new passenger cars to be equipped with the eCall system by 2015. In the event of an accident, the eCall system automatically establishes a voice connection with the emergency services, while sending through critical data including time, location, direction of travel and vehicle identification.

The GSMA fully supports the implementation of eCall and is working with its members to ensure the necessary technical enablers are in place. The Association has also produced guidelines for embedding mobile connectivity for the automotive industry.



Some policy makers have concerns about the privacy and security of services that make use of embedded mobile connectivity. In the education sector, in particular, the growing use of social media and the related disclosure of personal information calls for additional guidance and student education to ensure participants are able to manage the privacy implications of remote learning via social networking media (see chapter 2 for more detail).

Harnessing Near Field Communications

One of the key enablers of the connected future will be Near Field Communications (NFC) - a contactless radio technology that can transmit data between two devices within a few centimetres of each other. NFC chips are now being embedded into mobile phones, enabling an array of new digital services, such as:

- **Ticketing** – replacing paper tickets on public transport systems
- **Payments** – replacing cash and credit cards to purchase goods and services
- **Access control** – replacing traditional keys
- **Couponing** – replacing vouchers and coupons

In each case, NFC can cut costs by replacing physical receipts, tickets or plastic cards, while enhancing the consumer experience by providing greater interactivity and convenience. For example, consumers can use NFC to track their purchases and store loyalty points on their phone, while employees can use the transaction data captured by NFC to file expense claims. Commercial NFC-based services are live in a growing list of countries, including France, South Korea, Tanzania, Turkey and the UK.

The GSMA and mobile NFC

To help the NFC ecosystem gain critical mass, the GSMA is supporting and promoting the adoption of NFC services using the SIM as the secure element to provide authentication, security and portability across many different handsets. Adopting SIM-based NFC as a global standard will also ensure economies of scale and interoperability, which will be critical to the widespread uptake of NFC, enabling people around the world to benefit from NFC services, regardless of their operator network or device type.

As of November 2011, 45 of the world's leading mobile operators had committed to support and implement SIM-based NFC solutions and services. These mobile operators serve 3.6 billion connections (more than 60% of the global mobile subscriber base). Handset and point of sale terminals manufacturers are also supporting NFC. Leading device manufacturers, including HTC, LG, Nokia, RIM, Samsung and ZTE, are rolling out a broad range of NFC handsets that support the SIM-based approach advocated by the GSMA.

Nearly 1.5 billion SIM-based NFC handsets will have been sold worldwide between 2010 and 2016, supporting transactions of more than \$50 billion globally over the same period, according to forecasts from industry research firm Strategy Analytics. Furthermore, ABI Research predicts that 85 per cent of all new point of sale terminals shipped in 2016 will be NFC-enabled.

Mobile NFC is set to gain more momentum during 2012. In the Netherlands, for example, a joint venture of KPN and Vodafone, with ABN Amro, ING and Rabobank, plans to launch mobile NFC services in 2012, while in the U.S., AT&T, Verizon and T-Mobile have formed the ISIS joint venture to launch NFC-based services in the same year.

The GSMA is working with the European Commission and other policy makers to develop the optimum regulatory environment to enable both consumers and businesses to harness the benefits of NFC-based services. A Booz & Co. study, commissioned by the GSMA and published in November 2011, identified the following socio-economic benefits of SIM-based NFC:

- **Increased competition** through reduced cost and infrastructure barriers.
- **Greater consumer value** and choice driven by increased competition and the need for greater product innovation, as well, as price differentiation.
- **Increased financial transparency** driven by the widespread adoption of NFC, which provides insight on financial transactions, including tax, customs and anti-money laundering.
- **Improved public sector** servicing realised through public sector adoption of NFC-enabled delivery and service products (e.g. identity, health and social security cards).
- **Reduced carbon footprint** achieved through an increased growth in electronic payments, a general reduction in cash processing and card manufacturing, a reduction in the use of paper for tickets, coupons and receipts and greater incentives for the adoption of digital products and services.

Closing the digital divide

Mobile phones have become one of the most widely-used communications tools in history and are one of the few technologies to cross the so-called digital divide between the rich and poor. The falling cost of both handsets and services means that even people on low incomes can now afford to become connected. In the EU, for example, fierce competition in the mobile market drove down service prices by an average of 11-13% per annum between 2006 and 2010, according to the *European Mobile Observatory*, published by the GSMA in 2011. In comparison, fixed line prices fell by only 5% a year from 1998 to 2010.

Similarly, intense competition is driving down the average price of mobile services in the Asia-Pacific region. In Pakistan, for example, the effective price per minute has fallen 52 per cent a year between 2008 and 2010, according to the *Asia Pacific Mobile Observatory*, also published by the GSMA in 2011. In Indonesia and the Philippines, the effective price per minute has fallen by 45 per cent and 34 per cent a year respectively over the same period.

In Africa, fierce competition has also driven down prices and increased penetration. Price wars have been common across the continent as operators compete for market share with innovative revenue and pricing options – mobile operators have reduced prices an average of 18% between 2010 and 2011, according to the *Africa Mobile Observatory 2011*, making mobile connectivity more broadly affordable to the masses.

Moreover, mobile value-added services have been launched across Africa to enable and support agriculture, banking, education, healthcare and gender equality. In particular, the emergence of mobile money transfers and mobile banking puts Africa firmly at the forefront of the development of mobile money services.



Mobile Money for the Unbanked

More than one billion customers in developing countries have access to a mobile phone, but do not have a formal bank account. The mobile networks provide a sustainable and scalable distribution channel through which to provide affordable financial services to the unbanked. In November 2008, the GSMA received a grant from The Bill & Melinda Gates Foundation to develop the Mobile Money for the Unbanked (MMU) programme. Inspired by the success of M-PESA in Kenya, the MMU's mandate is to help mobile operators deploy and scale mobile money services for the unbanked across Africa, Asia and Latin America.

When the MMU programme was launched, there were fewer than 20 mobile money deployments in the world, and today, there are more than 100. The programme has allocated \$5 million of funding across 19 operators for mobile money pilots, financial product innovations, and further scaling of existing mobile money deployments. These grants have supported the growth of the sector and built a deep repository of mobile money knowledge which has been made available to the broader industry.

For the next three years, MMU's objectives are:

- address the front-end distribution challenges, such as building and managing agent networks, improving the quality and range of services, and encouraging poor customers to adopt mobile money.
- demonstrate that mobile money systems can interoperate technically and commercially with other mobile money systems and/or financial service providers in order to increase network effects and/or the range of products delivered over mobile money systems.
- increase the ability of mobile money providers to address the regulatory barriers which prevent them from serving unbanked customers.



Reducing the gender gap

In February 2011, the GSMA launched the mWomen Programme to:

- Shift mobile industry resources to reach underserved women and establish this market segment as a key opportunity for the mobile industry;
- Catalyse the creation, launch and scaled distribution of life-enhancing mobile value-added services for underserved women;
- Support underserved women's effective use and ability to engage with mobile technology; and
- Provide access to mobile products and services to enable women's empowerment.

During 2011, GSMA mWomen released recommendations for policymakers to contribute to closing the mobile phone gender gap and integrating gender into their ICT programmes. In overview the recommendations were to

- Reduce the total cost of ownership (TCO) of mobile
- Remove cultural barriers to mobile phone ownership and access to ICTs by women
- Address limited technical literacy amongst women at the base of the pyramid
- Encourage the development of value-added mobile services that benefit women in particular

In November 2011, GSMA mWomen launched Phase 2 of the programme in partnership with USAID, AusAID and VISA. The partnership is aiming to reduce the mobile phone gender gap by 50 per cent in order to provide life-enhancing services to underserved women in developing markets by 2014.



Mobile learning

Building on an initial landscaping report 'mLearning: A Platform for Education at the Base of the Pyramid', the GSMA partnered with the MasterCard Foundation in 2011 to spearhead further research exploring the aspirations of young people around education and skills development, identifying the subjects and gaps in knowledge where mobile technology can be leveraged in order to promote access to learning resources and life enhancing tools. The countries covered in the analysis are Ghana, India, Morocco and Uganda.

In 2012, the mLearning Programme will feed the findings of the research into new and existing mobile learning services in order to maximise scale and help achieve commercial sustainability.

Early in 2012, the programme plans to publish a report entitled *The Wants and Needs of Base of the Pyramid Women* and develop the *mWomen Business Case Framework*, both funded by the Australian Agency for International Development (AusAID) and the U.S. Agency for International Development (USAID).

Supporting agriculture

In June 2011 the GSMA mAgri Programme launched the mFarmer Initiative to support mobile operators in launching large-scale and commercially-viable agriculture information services that can benefit smallholder farmers. With funding from the Bill & Melinda Gates Foundation and USAID, the mFarmer Initiative aims to help operators reach two million smallholder farmers by 2015 with relevant and actionable agricultural information services delivered via sustainable and scalable business models.

Chapter 2 Safeguarding Consumers

Over the past two decades, the mobile industry has earned a reputation for maintaining a safe and secure environment for its customers. The industry needs to ensure it preserves that trust as it rolls out mobile broadband networks, which enable smartphones and other feature-rich handsets to quickly and easily access a huge variety of new services and applications.

Vibrant and dynamic ecosystems have emerged to take advantage of the capabilities of mobile networks and the open development platforms offered by smartphones. These ecosystems are enabling hundreds of millions of people to use the mobile medium to shape and present rich personal identities online, connect with communities of their choice, and engage with innovative applications and services. Much of this activity relies on the real-time access and use of personal information that is often transferred and shared internationally between applications, devices and companies.

While open platforms enable innovative business models and the personalisation of applications and services, they may also provide a vehicle for malicious or surreptitious access to an individual's personal information. Even applications that legitimately access and use personal information may fail to meet the privacy expectations of consumers and undermine their confidence and trust, ultimately jeopardising the continuing success of the mobile Internet.

Problems occur when individuals are not made aware in a clear and transparent way, of how their personal information will be used and when they are not given opportunities to express meaningful choice and control over their information. Information privacy continues to be a significant concern for many mobile consumers, according to a survey of more than 4,000 individuals in Singapore, Spain and the U.K. commissioned by the GSMA and conducted between April 2011 and June 2011. Some 81% of the respondents

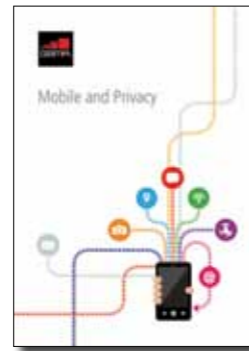


said that safeguarding their personal information is very important and 76% said they are very selective about who they give their information to.

In terms of privacy and security, consumers should, ideally, enjoy a consistent and transparent experience right across the mobile ecosystem value chain, irrespective of the technologies, business models and data flows involved. Individuals need to be able to make informed decisions about their information and privacy in simple and intuitive ways that don't compromise their experience of the mobile medium.

Achieving the right balance between usability and privacy will require co-operation and coordination across the entire mobile ecosystem and a different regulatory approach. Firstly, the global nature, and the large number and wide diversity of mobile Internet services, means operators can no longer safeguard the mobile environment and consumer experiences on their own. Secondly, existing regulatory frameworks often fail to recognise that consumer privacy experiences are increasingly shaped by dynamic and multi-faceted online services. Most of the regulations governing privacy and data protection were drafted in a different era and amount to a patchwork of local and regional laws. This market-by-market approach is no longer appropriate in a world in which consumers can access services from a vast array of providers located across many different countries. Borders are of decreasing importance in a globally-connected and interdependent world.





The GSMA Mobile Privacy Initiative

The GSMA is working with its members and the broader mobile ecosystem to address these challenges through the Mobile Privacy Initiative. In January 2011, the GSMA published a set of universal privacy principles that should apply to mobile services. The key principles are:

- **Openness, Transparency and Notice:** Application and service providers should provide their customers with clear, prominent and timely information regarding their identity and data privacy practices.
- **Purpose and Use:** The access, collection, sharing, disclosure and further use of individuals' personal information should be limited to meeting legitimate business purposes, such as providing applications or services as requested by customers or to otherwise meet legal obligations.
- **User Choice and Control:** Mobile subscribers should be given opportunities to exercise meaningful choice and control over their personal information.
- **Data Minimisation and Retention:** Only the minimum personal information necessary to meet legitimate business purposes and to deliver, provision, maintain or develop applications and services should be collected and otherwise accessed and used. Personal information must not be kept for longer than is necessary for those legitimate business purposes or to meet legal obligations, and should subsequently be deleted or rendered anonymous.
- **Respect Individuals' Rights:** Mobile subscribers should be provided with information about, and an easy means to exercise, their rights over the use of their personal information.
- **Security:** Personal information must be protected, using reasonable safeguards appropriate to the sensitivity of the information.
- **Education:** Mobile subscribers should be provided with information about privacy and security issues and ways to manage and protect their privacy.

Privacy Design Guidelines

The GSMA believes giving consumers ways to express choice and control, appropriate to the device and the context in which it is being used, is absolutely key to maintaining trust and confidence in mobile applications and services. In the GSMA's survey of people in Singapore, Spain and the U.K., 92% of respondents expressed concern about applications collecting their personal information without their consent, while 89% said it is important to know when their personal information is being shared by an application and to be able to turn this off or on. Moreover, 84% said they want the choice whether to receive advertising based on their browsing behaviour.

To address this demand head-on, the GSMA, after consulting representatives from across the mobile ecosystem, published a set of *Privacy Design Guidelines for Mobile Application Development*. The guidelines seek to articulate the privacy principles in functional terms and make interactions, controls and notices consistent across devices, applications and platforms.

The guidelines are intended to apply to all parties in the application or service delivery chain that are responsible for collecting and processing personal information – developers, device manufacturers, platforms, operating system companies, mobile operators, advertisers and analytics companies.

These guidelines adopt a 'Privacy by Design' approach which recognises that privacy must be addressed in a pro-active manner from the start of the development of an application and not as an afterthought or an 'add-on'. As well as examining how best to implement the guidelines for operator own-branded applications, the GSMA and its members are encouraging other players in the mobile ecosystem to use the guidelines for their own services as well.



Getting regulation right

In a fast-changing marketplace, regulation can quickly become out-of-date as advances in technology and innovative new service propositions reshape the privacy and security landscape. In this context, self-regulation may be more effective than direct regulation.

Where regulation is implemented, policy makers should ensure it is consistent across different sectors and different technologies, both to ensure that consumers have a consistent experience and to ensure a level playing field between competing service providers. For example, in Europe, mobile operators are subject to certain e-privacy rules that do not apply to non-telecommunications companies, such as Internet players, even though both parties collect and use functionally-equivalent data, such as the geographic location of mobile handsets. This inconsistency has been recognised by the Article 29 Working Party (Europe's data protection regulators) in an opinion on 'Geolocation on Smart Mobile Devices'.

The GSMA believes regulation should support consistent privacy experiences regardless of where the service is provided from and the technology used. For the same reasons, it is also important that governments worldwide harmonise regulation as much as possible. Ideally, regulation should protect consumers' privacy in a consistent way regardless of whether a service is delivered from Europe or from an island in the Pacific Ocean.

In Europe, policy makers recognise the need for consistency and are reviewing existing data protection rules to ensure they are fit for purpose in a globally-connected and interdependent online world. The European Commission is also seeking to ensure that consumers' privacy is respected and protected irrespective of where services are supplied from or data is processed, and irrespective of the technology or business sector involved. The GSMA welcomes these efforts.



Young people and mobile phones

Across the world, young people are embracing the opportunities that come with carrying a mobile phone. Mobile connectivity is enriching children's lives by providing them with a convenient and rich medium through which to interact with friends, access education materials, play games and learn about the world. Moreover, in many parts of the world, mobile networks are the primary and, often, the only way in which adults and children can access the huge array of information and entertainment services hosted on the Internet.

Some 69% of children aged between eight and 18 use mobile phones, according to a study of 3,528 pairs of children and parents in Egypt, Japan, India and Paraguay. The study, conducted by the GSMA, NTT DOCOMO (Japan), Bharti Airtel (India), Mobinil (Egypt) and TIGO (Paraguay) during 2011, also found that 40% of children use their mobile phone to access the Internet. Young people often embrace the benefits and opportunities delivered by mobile connectivity faster than their parents, guardians and teachers. For example, 73% of children who access the mobile Internet use social networking on their mobile phone, compared with 43% of their parents, according to the study.



Children equipped with a handset can go out safe in the knowledge that they can reach their parents or guardians if and when they need help. At the same time, the mobile networks enable parents to reach their children whenever they need to. Although 52% of parents whose children use mobile phones feel safer in an emergency, parents also have concerns about their children's mobile phone usage. The study found that between 70% and 80% of parents are concerned about issues, such as overuse of mobile phones, usage costs and privacy. Although 80% of children protect their social networking profile by limiting the viewing of their profile to friends or friends of friends, one fifth of children have completely open profiles available to anyone who wants to see it, the research found.

The survey, which is undertaken annually in conjunction with NTT DOCOMO and supported by GSMA member operators who run the local country research in their markets, forms a key element of the GSMA's work to enhance the industry's understanding of how children and young people engage with mobile technology. Over the past three years, the research, which is sponsored by mobile phone operators in each country, has covered more than 15,500 pairs of children and parents in Japan, Egypt, India, Mexico, Cyprus, China, Paraguay and Korea.

The GSMA mYouth programme

Through its mYouth programme, the GSMA supports mobile operators in both promoting the benefits of mobile technology to young people and raising awareness about how to use mobile services safely. The mYouth programme also works alongside the GSMA's mEducation and mLearning programmes, which are designed to help both adults and children use mobile devices and mobile connectivity to acquire knowledge and expertise.

The GSMA's mYouth programme places great value on partnerships and engaging in constructive dialogue with governments, child experts, NGOs, academics, parents and educators. In 2011, the GSMA mYouth team was active in contributing to the ongoing policy debate on children and technology. Representatives of the programme participated in panel discussions and made presentations at the ITU's World Summit on the Information Society event in Geneva, the Internet Governance Forum in Nairobi and the ITU's Connect the World event. The GSMA also participated in the Family Online Safety Institute's (FOSI) European conference in May and attended FOSI's autumn Conference in Washington DC.

The programme also contributes to the ITU's child online protection working group, the Internet Watch Foundation's funding council, and participates in the European Safer Internet forum. Furthermore, the team organised a high level workshop on child online abuse images in conjunction with Indotel, the telecoms regulator in the Dominican Republic. The GSMA also presented at INHOPE's (the international association of Internet hotlines) annual conference for industry and law enforcement, which was held in Rome.



Self-regulation

The GSMA works with the mobile industry to develop and adopt self-regulation, which is generally more effective than regulation in adapting to fast-evolving technologies and accommodating differences in cultural and societal standards. In Europe, for example, 83 European mobile operators have implemented the European Framework for Safer Mobile Use by Younger Teenagers and Children through the roll out of national voluntary agreements on child protection, known as codes of conduct. Coordinated by GSMA Europe, the Framework lays down recommendations to ensure that younger teenagers and children can safely access content on their mobile phones.

In Europe, the GSMA, along with other leading trade associations, is supporting the ICT Coalition, which has launched a set of principles aimed at enhancing online safety for children and young people. The ICT Coalition and its principles mark a step forward in the evolution of industry self-regulation. The Coalition brings together for the first time many key industry players from across an increasingly diverse communications and Internet market. The GSMA and other members of the Coalition are urging more industry players across the value chain to demonstrate their support for child safety by joining the ICT Coalition and adopting its principles.

Signatories to the ICT Principles aspire to:

- Develop innovative approaches to enhance safe and responsible ICT use by children and young people
- Empower parents and carers to take action to engage with, and protect, their children.
- Raise awareness of ways to ensure safety online and responsible behaviour towards others
- Provide easily-accessible, clear and transparent information
- Raise awareness of how – and to whom – to report abuse and concerns.

The ICT Coalition complements the CEO Coalition, a mutually-supportive initiative run by European Commission Vice President Neelie Kroes. The ICT Coalition also encourages signatories to collaborate with EU authorities to strengthen online safety.

The Mobile Alliance

Run by the GSMA, the Mobile Alliance against Child Sexual Abuse Content, a voluntary initiative, aims to obstruct the use of the mobile environment by individuals or organisations wishing to consume or profit from child sexual abuse content. Many of the world's leading mobile operator groups are part of the Alliance, and all work towards stemming, and ultimately reversing, the growth of online child sexual abuse content. By the end of 2011, 62 mobile operators had implemented substantive measures to meet the objectives of the Alliance.

As well as sharing information and best practice, the Alliance tracks developments related to technology and online child sexual abuse images in order to ensure mobile operators are informed of the most appropriate ways to tackle this issue. The GSMA continues to promote the Alliance and encourage operators to join this important initiative.



Chapter 3 Spectrum for Mobile Broadband

Spectrum is the fundamental raw material that enables the delivery of mobile broadband services. Meeting the rapid growth in demand for mobile broadband will depend in large part on the supply of spectrum. At the end of 2011, there were more than six billion mobile connections worldwide. All these connections depend on spectrum.

Many people now connect to the Internet via mobile networks – using smartphones, tablets or laptops to update social networks, read news and email, watch videos or review work documents. Just as most of the world's population made their first phone call via a mobile device, so too will most people connect to the Internet for the first time using a mobile device. Much of this connectivity is supplied by the networks of mobile operators, leading to very rapid growth in mobile data traffic.

In 2005, the International Telecommunications Union (ITU) forecast worldwide mobile traffic would increase from around 610 PB per year in 2010 to around 1450 PB per year in 2020—in reality, in 2010 mobile traffic was seven times the 610 PB forecast. (Source: ITU, Analysys Mason)

In some cities, mobile networks are nearing capacity constraints and mobile operators are encouraging consumers to offload traffic via Wi-Fi connections where feasible. But Wi-Fi coverage and capacity is limited, particularly in developing countries. Government allocation of more spectrum to mobile services will help meet the growing demand.

Numerous studies have shown that increasing access to mobile telecommunications and broadband will generate substantial socio-economic benefits and can fuel GDP growth. Mobile operators generate almost 2% of global GDP.

Given its fundamental importance to mobile services and the broader economy, governments need to manage spectrum as efficiently and effectively as possible, reviewing and releasing currently under-used frequencies. To enable mobile operators to invest in new broadband capacity, governments also need to ensure that spectrum is made available at reasonable prices and in a timely, fair and transparent manner.



Long-term needs

The GSMA is focused on securing more internationally-harmonised spectrum for mobile services through the ITU World Radiocommunication Conference process. The GSMA's immediate goal is to ensure that WRC 2012, which is being held in Geneva in January and February, adopts a future agenda item to identify more spectrum for IMT (the ITU family of standards for mobile communications).

In 2012, the GSMA will launch a comprehensive, multi-dimensional campaign to ensure that additional harmonised spectrum is identified for mobile services at WRC 2015/16, paving the way for it to come into commercial use between 2020 and 2025.

Immediate needs

Given the long time lag between the start of the international allocation process and national commercial deployment (typically about a decade), gaining access to spectrum already identified for mobile is critical in the short- to mid-term. Depending on the country and region, the potential bands for mobile include 700MHz, 800MHz, 900MHz, 1.8GHz, 1.9GHz, 2.1GHz, 2.3GHz, 2.6GHz and 3.5GHz.

Despite the benefits associated with making this spectrum available, many governments do not have clear, transparent processes for allocating new spectrum bands. The GSMA is working with these governments to ensure the mobile industry secures the necessary harmonised spectrum to provide the connectivity that citizens need to live and work in the 21st century. Harmonisation is essential to deliver the benefits of economies of scale to operators and consumers. Failure to harmonise spectrum can increase the cost of a handset by more than US\$30.



The Digital Dividend

One of the near term goals of the GSMA is to secure harmonised deployment of the digital dividend spectrum in the 700MHz and 800MHz bands—the spectrum freed up as a result of the transition from analogue to digital television. There have been auctions of digital dividend spectrum in the U.S., Germany, France and several other markets.

The US auction of the 700MHz digital dividend spectrum in 2008 demonstrated the economic value of this low-frequency spectrum – the auction proceeds reached US\$19 billion, or US\$1.18/MHz/pop. The subsequent auctions of the 800MHz digital dividend band in Europe also attracted high prices: Italy, for example, auctioned its digital dividend spectrum for €2.6 billion (US\$ 3.6 billion, or US\$1.11/MHz/pop).

The propagation characteristics of the digital dividend spectrum make it ideal for expanding mobile broadband coverage to rural areas and for improving indoor reception in urban areas. Operators can deploy networks in this spectrum using fewer base stations, requiring less capital investment, to cover the same geographic area as higher frequency bands. For example, it costs significantly less to build out mobile broadband coverage in digital dividend spectrum than with the 2.1 GHz spectrum widely used for mobile broadband today. (Source: SCF Associates)

Releasing this spectrum in a timely manner can yield major economic benefits, according to GSMA research. In the case of Nigeria, for example, the timely allocation of the digital dividend would contribute 1.22% to the country's GDP by 2015. Similarly, a report from the Boston Consulting Group (BCG)

found that allocating the 700MHz band for mobile broadband in Asia would mean a US\$729 billion increase in GDP for the Asia Pacific region by 2020. The BCG report also found that a failure to harmonise the spectrum in Asia would significantly reduce these benefits.

It is, therefore, vital that governments in the Asia-Pacific region follow Australia and New Zealand and allocate spectrum in line with the harmonised 700MHz band plan adopted by the Asia-Pacific Telecommunity (APT). The APT band plan delivers 2 x 45MHz of spectrum for mobile broadband, and adoption in major Asian markets could generate substantial economies of scale for equipment makers producing compatible devices, lowering costs for consumers.

In Latin America, allocating 'digital dividend' spectrum in the 700 MHz band for the deployment of mobile broadband services could contribute almost US\$15 billion to the Latin American economy and expand mobile broadband coverage to nearly 93 per cent of the population, according to a report by Telecom Advisory Services. This spectrum, currently allocated for broadcasting services in most of Latin America, is underutilised. Bold political decisions are required to migrate broadcasting to more-efficient digital technologies in the near-term and re-allocate the spectrum for use by mobile broadband services. Such a move will help governments achieve national broadband goals, especially given the excellent coverage characteristics of the 'digital dividend' spectrum and the fact that mobile broadband will be the main means by which consumers in Latin America will connect to internet.

The 2.6GHz band

An important band for mobile broadband networks, 2.6GHz spectrum has the potential to be harmonised globally and many countries have already adopted a harmonised band plan. As radio signals at this frequency have only about half the range of signals in the digital dividend spectrum, the 2.6GHz band tends to attract lower prices at auction, but nonetheless represents a significant cost to operators and is critical to meeting capacity needs in urban environments. In 2011, the 2.6GHz auction in France generated €936 million (US\$1.3 billion). There is increasing momentum to make this spectrum available. Brazil, Chile and Canada are all proceeding to license 2.6GHz spectrum through auction processes during 2012.



Network and spectrum sharing and trading

The GSMA believes all countries should have a regulatory framework that enables mobile operators to engage in voluntary sharing of infrastructure and voluntary sharing of spectrum in mobile bands. Spectrum sharing and infrastructure sharing agreements can intensify the use of frequency resources to the benefit of society and consumers. These agreements should not be subject to additional fees or regulatory constraints, as these will only serve to discourage operators from entering arrangements to share spectrum and infrastructure.

It is also important that governments and regulators maintain the concept of exclusive usage rights to be awarded to the licensee, ensuring the optimum use of the spectrum. The licensee is best placed to develop and manage effective spectrum sharing arrangements.

At the same time, the GSMA supports a more technology-neutral approach to the use of all the existing mobile bands. Governments should allow operators to deploy mobile technologies that can technically co-exist within the international regionally harmonised mobile bands. Mobile operators should also be able to engage in voluntary spectrum trading. Ideally, operators should be allowed the flexibility to trade a spectrum usage right or a part thereof.

Fair and transparent licensing regulations

Businesses and consumers benefit from transparent and predictable regulation. The GSMA is therefore encouraging governments to publish spectrum road maps for all the mobile bands, outlining the timing of availability, bandwidth available per mobile band, vital terms and conditions for technically defining the usage rights and key information on the cost of holding usage rights. Such road maps are a key tool for mobile operators planning their network investments.

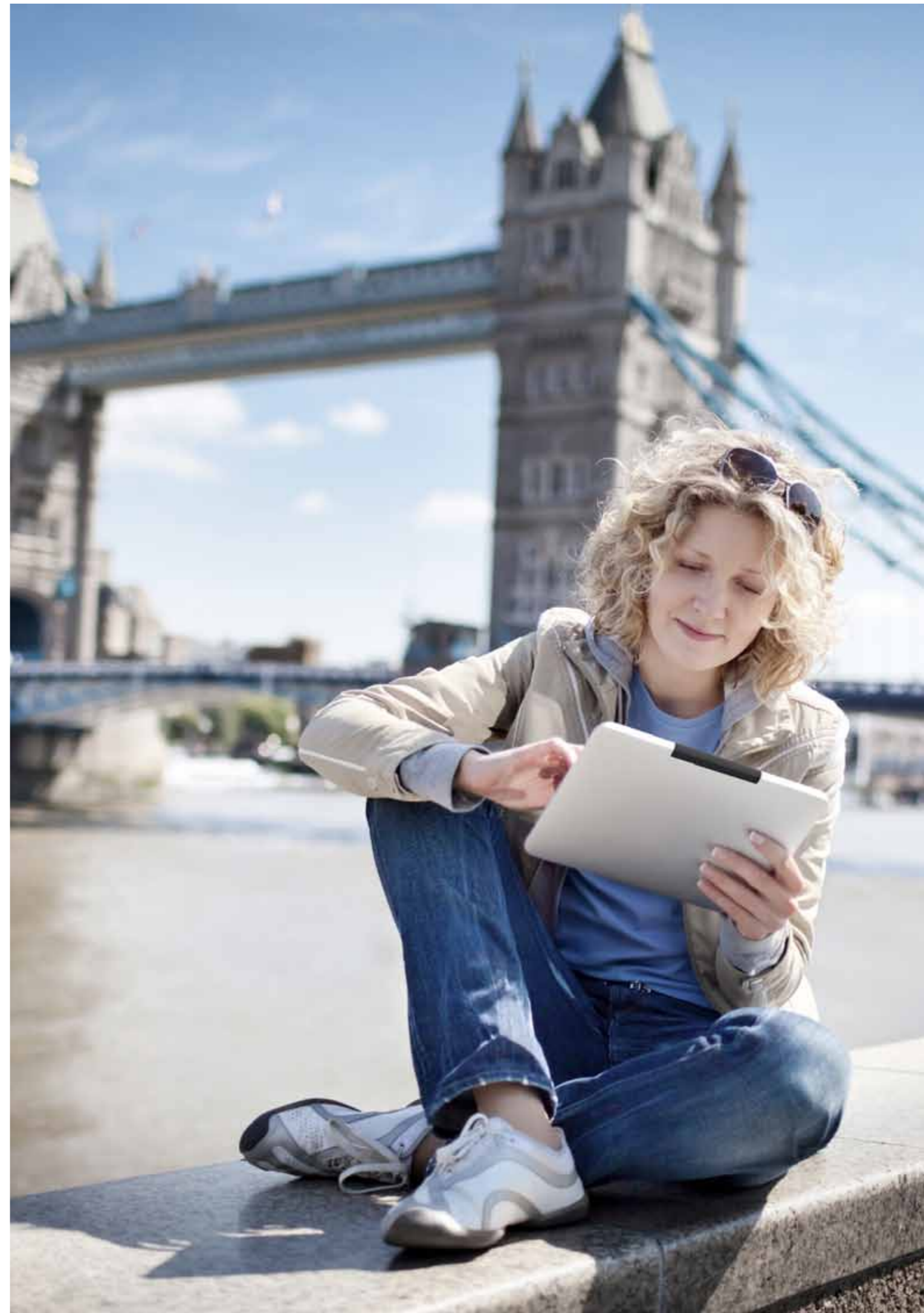
As licenses start to come up for renewal, particularly in the 850/900MHz and 1800/1900MHz bands, governments need to ensure that they provide as much clarity and certainty as possible around the renewal process to encourage mobile operators to continue to invest in their networks. Governments should make decisions on the award of spectrum usage rights for the next term in a timely way before the expiry of the existing usage right term; ideally three to five years before the expiry of the existing usage right.

Moreover, the cost of license renewals should be set at a level that enable operators to continue to invest in expanding capacity and coverage – the cost of renewal of spectrum usage rights should be based on principles of achieving the most economically efficient outcome, rather than short term revenue maximization for governments.

Boosting broadband

If the mobile industry can gain access to more spectrum on fair and reasonable terms, it can make an even greater socio-economic contribution to societies worldwide. To date, the industry has used its relatively small spectrum allocation to bring mobile coverage to more than 90% of the world's population. Today, more than five billion people use more than six mobile connections, including more than 750 million mobile broadband connections.

Like road and rail networks, broadband infrastructure is one of the key pillars of a modern economy – an individual or a community without broadband access is at a competitive disadvantage. With access to sufficient spectrum on fair and reasonable terms, mobile operators are ideally placed to deliver the benefits of broadband to citizens throughout a country, no matter whether they live in cities or rural areas.



Chapter 4 Mobile and Health

There is no convincing scientific evidence that the radio signals from mobile phones or wireless networks can increase cancer in humans and the consensus among expert groups is that the low powered radio signals produced by a mobile phone do not have sufficient intrinsic energy to affect genetic material. But the GSMA, which continues to support research into the impact of mobile technology on health, recognises that some people are concerned about possible health risks from the use of mobile phones and living near wireless network antennas.

New IARC classification

At the end of May 2011, the International Agency for Research on Cancer (IARC) classified radio frequency electromagnetic fields as possibly carcinogenic to humans, largely based on the suggestion of an increased risk for glioma – a malignant type of brain cancer – shown in the results of the INTERPHONE project, which were published in 2010. The new classification highlights the need for further research into the possible long-term impact of mobile phone usage to clarify continuing uncertainties, but does not justify a change the way in which mobile technology is regulated.

In a press conference to announce the classification, IARC cautioned that current scientific evidence only shows a possible link, not a proven one, between wireless devices and cancers. The World Health Organization (WHO) updated its factsheet on electromagnetic fields and health, concluding that: “A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use.” The WHO plans to conduct a formal risk assessment of all studied health outcomes from exposure to radiofrequency fields by 2012.

Following the publication of the INTERPHONE results, the WHO’s International Electromagnetic Fields (EMF) Project said: “The international pooled analysis of data gathered from 13 participating countries found no increased risk of glioma or meningioma with mobile phone use of more than 10 years. There are some indications of an increased risk of glioma for those who reported the highest 10% of cumulative hours of cell phone use, although there was no consistent trend of

increasing risk with greater duration of use. Researchers concluded that biases and errors limit the strength of these conclusions and prevent a causal interpretation.”

The International Commission on Non-Ionizing Radiation Protection – which sets the international guidelines for safe exposure to mobile phones – added: “ICNIRP therefore considers that the results of the INTERPHONE study give no reason for alteration of the current guidelines.”

Professor Patricia McKinney, epidemiologist at the University of Leeds and leader of the UK North part of the INTERPHONE study, said in a statement: “For the estimated total (cumulative) hours of phone use there was an apparently increased risk of glioma seen in the highest ten percent of users. However, some of these had reported improbable levels of use, for instance 12 or more hours every day; there was no trend of increasing risk with greater phone use for people in the nine lower use categories; and there was no relation to risk for the cumulative number of phone calls made. These factors suggest that the apparently increased risk with the highest cumulative hours of use cannot be interpreted as evidence of mobile phones causing brain tumours.”

Cancer authorities around the world advised the public not to be alarmed by IARC’s classification of mobile phones as a possible carcinogen. “These findings need to be put in context. While we need to continue researching the possible link between mobile phones and cancer, it is important to remind people there are many more established cancer risk factors that we can take action every day [sic],” Chair of Cancer Council Australia’s Occupation and Environmental Cancer Committee, Terry Slevin, said in a statement.



Dr Mark Matfield, scientific co-ordinator of the Association for International Cancer Research (AICR), based in the UK, also advised people against being misled by some of the headlines in tabloid newspapers. “The WHO/IARC have put mobile phones in the lowest possible category – possible but not likely – to increase the risk of brain cancer,” Dr Matfield told U.K. newspaper *The Courier*.

Brain tumours among mobile phone users are not clustered in the part of the brain where most of the energy from a phone is absorbed when a mobile is held to the ear to make a call, according to a study by researchers from the University of Tampere in Finland published in 2011. The study also concluded that people who had used mobile phones for the longest amount of time, and spent the most time on the phones, were no more likely to experience tumours located within five centimetres of the phone, where “90% of the energy to the head” is absorbed.

The researchers looked at 888 glioma cases diagnosed between 2000 and 2004 in Denmark, Finland, Germany, Italy, Norway, Sweden, and south east England and mapped the exact location of the tumour within the brain, relative to where people would place a mobile phone while talking.

Future studies will follow the health of mobile phone users over a long period of time. These are already underway in Europe, with the support of GSMA members, and will involve up to 250,000 subjects. The GSMA notes that people who are concerned about the impact of mobile phones on health can take simple measures, such as using a hands free kit to reduce exposure.

Children and wireless technologies

In May 2011, an international workshop of 150 experts on the energy transmitted by mobile phones and Wi-Fi, organised by the WHO, confirmed that the current safe exposure guidelines set by ICNIRP adequately protect children. “The purpose of the meeting was to determine if our guidelines are adequate to protect children – who are different in terms of physiology, anatomy, and lifestyle,” Dr Paolo Vecchia the chairman of ICNIRP said in a press conference following the workshop held in Slovenia in May. “From the scientific results of the workshop, we can conclude that our guidance is adequate.”

At the workshop, participants acknowledged that some parents are concerned about their children’s use of mobiles and Wi-Fi hotspots in schools. However, it was clear from the deliberations at the workshop, that international safety guidelines have taken these concerns and potential risks into account when setting safe exposure limits.

“For UV radiation, we do know that people are at risk and now we have even more evidence for this position. In contrast, for EMF, and mobiles in particular, there is no evidence that children are at special risk,” Dr Vecchia said. “This means that there is no reason to change current guidelines. Nevertheless, we will continue to review the science, and the outcome of this workshop has contributed to that.”

Moreover, a study of children and teens in Northern Europe, published in July 2011, found mobile phone use does not increase the risk of brain cancer. “Because we did not find a clear exposure-response relationship in most of these analyses, the available evidence does not support a causal association between the use of mobile phones and brain tumors,” the researchers said in the study published in the *Journal of The National Cancer Institute*.

The researchers also said a link is “unlikely” because it did not show up when they looked for links with the regions of the brain most exposed to mobile phone radiation. “If there was a causal relationship, we would expect an increased risk specifically in these regions because the absorption of radio frequency energy from mobile phones is highly localized and has been shown to be considerably higher in the temporal and frontal lobes and the cerebellum compared with other parts of the brain,” the researchers said.

Research in this field continues. A major study – called MOBI-KIDS – is underway to assess any potential brain cancer risks associated with the use of mobile phones by children and teenagers. This five-year study involves young people aged 10 to 24 who have had a brain cancer, as well as people of a similar age who have not, and has recruited participants from Australia, New Zealand, Spain, The Netherlands, France, Germany, Austria, Italy, Greece, Israel and Canada.

Some mobile operators have deployed Wi-Fi networks to help manage the local data demand of smartphones. The U.K.’s Health Protection Authority issued a report in September 2011 on measured exposures from Wi-Fi in 12 classrooms from six primary and secondary schools and found that, during typical lessons, laptops transmitted less than 1% of the time and access points less than 12% of the time, resulting in laptop exposures more than 45,000 times below the international recommendations. Some Canadian schools have decided to remove Wi-Fi services in response to concern from parents about possible health risks to children. In response, in October 2011 Health Canada issued an updated fact sheet *Safety of Wi-Fi Equipment*, which concluded that “...no precautionary measures are needed, since RF energy exposure levels from Wi-Fi are typically well below Canadian and international safety limits.”

Concerns about mobile networks and Wi-Fi are also affecting deployment of wireless smart meters (electricity or gas meters that use radio signals to transmit information) in Canada and parts of the USA. However, measurements have shown that as these are low power devices (typically transmitting less than 1 watt) and only transmit data about 1% of the time, the exposures 30 cm in front of the smart meters are only 3% of safety recommendations.

Lower exposure limits

Excessively-low EMF exposure limits can have significant detrimental effects. New legislation in Brussels, Belgium, which severely limits EMF exposure from mobile phone base stations, means network operators will need to install more infrastructure to maintain the current level of service, according to a report prepared for the GSMA. The new infrastructure will increase the networks' electricity consumption and production of greenhouse gases. "[Belgium's] three operators anticipate that approximately 400 new base stations will need to be added to the already existing 1,000 sites in the Brussels Capital Region," the report Energy Impact of Lower RF-EMF Exposure Limit said.

Published in August 2011, the report estimates that the new limits will cause an increase in the associated electricity consumption of roughly 40 per cent, which potentially conflicts with the European Commission target for 2020 of saving 20 per cent of primary energy consumption compared to projections. The report found the additional costs for electricity would be €400,000 to €500,000 for all three operators, which they will partly absorb, but would also pass on to subscribers. The increase in energy consumption will also make it difficult

to meet the goal in the mobile industry's Green Manifesto to reduce the total global greenhouse gas emissions per connection by 40 per cent by 2020 compared to 2009.

The Parliament of the Brussels Region of Belgium has adopted a 3 V/m (volts per meter) exposure limit for mobile phone base stations, a limit 200 times stricter than the recommendations of the WHO - making them the most restrictive in the EU.

In 2011, the city council of Varades in North-West France also made a precautionary decision to reduce radio frequency exposures from antennas and masts to limits well below those recommended by the WHO. The municipality wanted to adopt an exposure limit of 0.6V/m, compared with the lowest WHO limit in France of 41V/m. However, in October 2011 the Council of State, the highest administrative law body, ruled that municipalities could not set local policies for base station siting as this legal responsibility lies with national telecommunications authorities. The GSMA believes that restrictive limits will not provide any additional health protection for the community. In addition, there is a growing body of research showing that adopting these kinds of precautionary measures increases the public's level of concern unnecessarily and would severely limit coverage.

"The National Agency for Sanitary Security (ANSES) wrote in their 2009 report on radiofrequency that the figure of 0.6V/m was without scientific foundation," a response from the French Federation of Telecoms said. A study for the French government found that imposing an 0.6V/m limit across the whole of France would result in large losses of coverage, especially indoors – a simulation found that the limit would result in an 82 per cent reduction in indoor coverage in one area of Paris, for example.

The impact of low exposure limits

Low exposure limits provide no additional health protection for the community, but they do have a real impact on efficient network deployment and operation, according to a report published in March 2010 by the Mobile Manufacturers Forum and the GSMA. The report summarises the key technical and network related implications of lower limits as follows:

Larger compliance zones: Without site modification, lower exposure limits result in larger compliance distances, or compliance zones, around a base station site. The compliance zones may become unrealistically large, and reach publically accessible areas;

Difficult site sharing: Lower limits can adversely affect the ability of network operators to co-locate and site share, resulting in an overall increase in the numbers of base station sites and therefore greater energy use;

More sites needed: As the technology evolves, lower exposure limits can limit the number of services that can be provided at any given site, resulting in inefficient deployment and an overall increase in the number of sites required by a given operator;

Gaps in coverage: To ensure compliance with lower limits the power output of antennas may have to be reduced. However, such a reduction in an existing network will affect coverage and create 'gaps' in the network, which will either result in patchy service and dropped calls, or require additional base stations to be deployed to restore coverage.

The GSMA encourage governments to adopt RF exposure limits for mobile networks that are based on the recommendations of the International Telecommunications Union (ITU) and the WHO. Compliance with these recommendations will provide protection for all persons against all established health risks from exposures to RF signals.



Disseminating scientific information

Whereas current global EMF recommendations give extensive guidance on how to measure/compute various exposure parameters relating to RF fields, there is a need for practical guidance for national administrations on the appropriate measures to take when considering the detailed expert RF exposure assessment standards, the scientific health risk assessment and the needs of risk communication.

The GSMA has made submissions to both ITU T Study Group 5 and ITU-D Study Group 1 proposing work to help address this need. The ITU's Plenipotentiary conference held in Guadalajara in October 2010 passed a resolution calling on the ITU "to collect and disseminate information concerning exposure to electromagnetic fields, including on EMF measurement methodologies, in order to assist national administrations, particularly in developing countries, to develop appropriate national regulations."

The GSMA also contributed to the ITU-T SG5 Africa two-day workshop, entitled *Practical measurement of EMF exposure*, held in Botswana in July 2011. The workshop covered RF electromagnetic field (EMF) exposure assessment and the wider aspects of understanding and communicating on what is known about health risks associated with human exposure to RF fields.

During 2011, GSMA Latin America, a regional interest group of the GSMA, created a task force with regional operators to work on health and environment issues. The task force promotes cooperation and information sharing with respect to the latest EMF exposure research, as well as exploring how to reduce the impact of mobile communications on the environment. In Chile, in October 2011, GSMA LA led an industry coalition that made comments on the new Antennas Law which places significant restrictions on mobile infrastructure development.

In December 2011, the Dominican Republic regulator Indotel and the GSMA, organised the first international health and mobile forum in Santo Domingo attracting representatives from The Ministries of Environment and Natural Resources, and the Public Health of the Dominican Republic, as well as approximately 200 opinion leaders, journalists and mobile industry executives from an array of countries. GSMA LA expects to replicate this event, which provided a forum for debate and knowledge-sharing across the public and private sectors, elsewhere in the Latin America region.

The importance of communication

Governments and the mobile industry need to actively communicate and maintain an open dialogue with communities about their health concerns. Mobile operators, for example, can go a long way to addressing public concerns, if they actively consult with communities on the siting of masts, providing advice from trusted health agencies and declaring compliance with international safety guidelines. Moreover, it is critical that governments develop clear national policies for the siting of mobile phone infrastructure to provide a framework for mobile operators' consultations with communities when building new telecommunications masts. Dr Jack Rowley, Director of Research and Sustainability for the GSMA, gave a keynote speech on this topic at the 27th Annual Conference and Trade Exhibition of the Caribbean Association of National Telecommunication Organizations (CANTO) in Paramaribo, Suriname in July 2011. The GSMA and the MMF have also produced a Risk Communication Guide to provide practical guidance and support on good risk communications practice for people working in the mobile industry, especially those who are facing public concerns about radio signals.

Mobile saving lives

Scientists are beginning to investigate the impact access to mobile connectivity can have in emergencies. The use of a mobile phone, rather than a landline, to report emergencies results in a significant reduction in the risk of death at the scene, according to a paper published online in December 2011 in the *Journal of Emergency Medicine*. The paper detailed a study of emergency dispatches at two major hospitals by researchers from the University of Glasgow and the University of Oxford in the U.K.

The study found that the total mortality rate was 1,981 deaths per 100,000 patients attended if mobile phones were used to alert emergency services compared with 2,128 deaths per 100,000 patients attended in cases where landlines were used.

The paper noted: "The use of mobile phones has the advantage of immediacy of access, in particular in situations such as road traffic incidents, outdoor accidents, and injuries as well as incidents occurring at rural locations, where access to landlines is unlikely to be readily available. This could potentially lead to more immediate advice to bystanders and patients and could improve pre-ambulance first aid."

Chapter 5

Mobile and the Environment

As concern mounts about the impact of greenhouse gases on the global climate, both individuals and organisations are seeking to use energy more efficiently. Although the global political agenda in 2011 was dominated by the economic malaise rather than longer-term environmental considerations, the rising cost of oil and other fuels means the two issues are increasingly intertwined.

Coordinated by the GSMA, the mobile industry is exploring ways to use energy more efficiently, while also helping other industries to do the same. The mobile industry spends approximately US\$35 billion a year on energy and individual mobile operators have long been working on becoming more power-efficient, both to reduce costs and their environmental impact. The industry's Green Manifesto, published by the GSMA in November 2009, explores how mobile operators and vendors can curb their own greenhouse gas emissions, together with those of other industries, between now and 2020.

The GSMA has several programmes designed to help other industries use mobile connectivity to enhance their products and services, increase their efficiency and curb their greenhouse gas emissions. These programmes span the automotive, healthcare, utilities and education sectors [see Chapter 1 for more detail].

The GSMA is planning to publish a follow up to the Green Manifesto in June 2012. This new paper will build on the original Green Manifesto and will encompass work by the GSMA's Mobile Energy Efficiency (MEE) quantifying the energy consumption and carbon emissions of mobile networks.

Mobile Energy Efficiency

In line with a commitment in the Green Manifesto, the GSMA has launched the Mobile Energy Efficiency (MEE) service to enable operators to benchmark the energy usage of their networks with those of other mobile operators and identify further opportunities to become more efficient.

Just over a year after starting as a pilot with Telefonica, Telenor and China Mobile in September 2010, the MEE programme is working with 35 mobile operator groups, accounting for more than 210 networks and serving 2.5 billion subscribers. The MEE Benchmarking service provides these operators with a common methodology for measuring their mobile network energy and environmental performance, supplemented by a detailed analysis of the relative network performance against a large dataset. The methodology has been recognised as a global standard and has been included in the International Telecommunication Union's standard ITU-T L.1410 Methodology for Environmental Impact Assessment of ICT Goods, Networks and Services.

The MEE Benchmarking methodology enables mobile operators to compare their networks on a like-for-like basis, taking into account factors beyond their control, such as population distribution and climatic conditions.

MEE Benchmarking measures networks against the following key performance indicators:

- Energy consumption per mobile connection
- Energy consumption per unit mobile traffic
- Energy consumption per cell site
- Energy consumption per unit of mobile revenue.



MEE Benchmarking identifies underperforming networks and quantifies the potential efficiency gains available, typically 10%-25% across a mobile operator's portfolio. Typical sources of energy savings identified include cooling (such as free air cooling), energy efficiency of network equipment, network design, and activation of energy-saving features in existing kit. MEE Benchmarking also provides operators with the opportunity to map improvements over time and quantify the impacts of cost reduction initiatives.

The MEE programme also addresses the European Commission's call for the information and communication technologies (ICT) sector to:

- Develop a framework to measure its energy and environmental performance
- Adopt and implement common methodologies
- Identify energy efficiency targets
- Report annually on progress.

Building on the MEE Benchmarking service, the GSMA has launched a new service, MEE Optimisation, which undertakes a detailed bottom-up analysis to identify the inefficiencies of a network and then provide the operator with a cost-benefit analysis of specific solutions that can be implemented to improve network energy efficiency. The GSMA partners with third parties, such as equipment vendors, to deliver the MEE Optimisation service to operators. The GSMA is piloting the first MEE Optimisation project and is in discussions with several members about rolling out the service more widely.

Green Power For Mobile

Launched by the GSMA's Development Fund in September 2008, with the support of the International Finance Corporation, the Green Power for Mobile programme aims to 'extend mobile beyond the grid' through the promotion of renewable energy technologies and energy efficient base stations. The Green Power for Mobile programme aims to sustainably extend mobile services to the 1.4 billion people without electricity and the further one billion people without reliable access to power.

Off-grid base stations have traditionally been powered by diesel generators – for example in India, 60% of the power required for telecom towers is generated using diesel. With the rising cost of diesel prices, the need to contain greenhouse gas emissions and major problems related to theft of diesel fuel, the Green Power for Mobile programme is working with key stakeholders in the mobile ecosystem (mobile operators, equipment providers, service providers) to increase the use of renewable energy sources, such as solar and wind, to power telecom towers.

The programme has been developing robust business cases to demonstrate that the use of renewable energies can be an efficient way to reduce operational expenditures for base stations with no or unreliable access to the electricity grid. To date, the Green Power for Mobile team has completed 20 feasibility studies with mobile operators worldwide to help them switch to green solutions.

At the end of 2011, more than 10,000 base stations worldwide were powered by renewable energy, according to the GSMA's Green Power for Mobile Deployment Tracker. The GSMA is also aware of plans by mobile operators for an additional 10,000 base stations to be newly built or converted to be powered by renewable solutions. The number of green base stations is expected to grow in the coming months as regulators increasingly encourage the use of renewable solutions for telecom networks. For example, India's Ministry of New and Renewable Energy, has asked telecom companies to consider cleaner, more-efficient alternatives and ways to cut their dependency on conventional fuels.

The Green Power for Mobile programme is also carefully monitoring innovations in renewable energy technologies that could impact the mobile industry in the coming years. In 2011, the team focused, in particular, on fuel cells and new battery technologies, resulting in enhanced collaboration between operators and vendors in these fields.



Community Power from Mobile

In November 2010, the GSMA Development Fund and Lighting Africa, a joint International Finance Corporation and World Bank programme, formally launched the Community Power from Mobile initiative to support and encourage mobile operators and tower-sharing companies in developing countries to provide power to local, off-grid communities in proximity to mobile base stations. Building on the Green Power for Mobile Programme, the Community Power from Mobile Programme combines the technical strengths of the Development Fund, GSMA members' expertise and social entrepreneurs into an ecosystem of innovators that can facilitate trial deployments of community power solutions.

In many emerging markets, mobile penetration has outpaced the growth of the electricity grid with 548 million mobile subscribers living without access to electricity. The growth of the mobile industry provides multiple channels to improve energy access: mobile base stations are often physically close to off-grid villages creating an opportunity to share power systems with surrounding communities; the growth of mobile payments provides an avenue to offer consumer financing products for solar home systems; and the established and growing network of handset and airtime vendors creates last-mile distribution points for phone charging and lighting solutions. Ultimately, this power could also be used by local businesses, clinics, schools and homes.

In essence, the Community Power from Mobile programme works to leverage the scale of mobile technology and infrastructure to improve the case for off-grid telecoms and provide millions of underserved communities with access to vital energy services.

Since the launch of the Community Power from Mobile programme, field work and exchanges with mobile operators and the energy and investment communities have increased awareness of the changing landscape of energy and infrastructure services in the mobile sector, as well as the obstacles to delivering power to rural communities. In 2011, the programme published a white paper entitled: Green Power for Mobile Charging Choices, which explores mobile phone charging solutions in the developing world.

The delivery of energy services to rural and off-grid communities is a complex challenge, but it presents an equally important opportunity – today low-income households spend US\$433 billion per year on energy, primarily for lighting, cooking and powering electronic devices. The combination of a social and environmental problem with an economic opportunity has attracted a wave of entrepreneurial energy and interest from investors. The GSMA is seeking to support small entrepreneurial teams with technical assistance and access to the mobile industry. These teams also need risk-taking pilot and seed funding (often in the form of grants or sympathetic debt), together with the flexibility and cooperation of mobile operators for commercial trials.

Chapter 6 The Public/Private Sector Dialogue

The challenges posed by the global economic crisis can only be successfully addressed through constructive and continuous dialogue between governments and the private sector. Such dialogue plays a crucial role in creating a business environment in which enterprises can thrive, create jobs and attract investment. Mobile connectivity has enormous potential to help resolve current economic challenges, but success depends on governments and industry working together. With that goal, the GSMA seeks to build bridges between the mobile industry, policy makers and other industries.

To maintain and enhance the dialogue between the mobile industry and the public sector, the GSMA is heavily engaged with key inter-governmental bodies, such as the International Telecommunications Union (ITU), the Organisation for Economic Co-operation and Development (OECD), the European Union (EU), the African Telecommunications Union (ATU) and the Asia-Pacific Telecommunity (APT). The Association also runs a large-scale Government Programme, consisting of events targeted specifically at Ministers and heads of regulatory authorities, to facilitate direct communication with governments and assist in building trust and understanding between the public and private sectors.

Engagement with inter-governmental bodies

As an active sector member of the ITU, the GSMA participates in several study groups, contributing mobile industry input to governmental meetings on a wide range of issues including spectrum, roaming, taxation, climate change, EMF and health, fraud and child online protection. The GSMA will also be actively engaged throughout 2012 in communicating the industry's perspective on the ITU's revision of its International Telecommunications Regulations (ITRs). Unchanged since 1988, the ITRs form the treaty that governs international telecommunication services between ITU Member States. Constructive dialogue between the private sector and governments on the ITRs is critical since the new treaty, to be signed at a World Conference on International Telecommunications in Dubai in December 2012, will undoubtedly impact the way the international mobile industry is regulated in future.

During 2011, the GSMA participated in the ITU's major intergovernmental events:

- At the Global Symposium for Regulators in Colombia, the GSMA spoke on taxation issues and held a series of bilateral meetings with regulators from around the world
- At the World Summit on the Information Society (WSIS Forum) in Geneva, the GSMA outlined how mobile broadband services can help support the attainment of the United Nations' Millennium Development Goals for 2015. The eight goals include ending poverty and hunger, providing universal education, ensuring environmental sustainability and improving child and maternal health.
- At ITU Telecom in Geneva, the GSMA spoke about the importance of securing sufficient and appropriate spectrum for the future growth of mobile broadband

At the annual meeting of the Internet Governance Forum (IGF), in Kenya, the GSMA engaged with stakeholders including governments, civil society and the technical and academic communities on key consumer protection issues such as privacy, data protection and child online protection. The IGF is a multi-stakeholder forum for policy dialogue on issues of Internet governance.

In 2011, the GSMA also strengthened its relationship with the OECD, becoming a formal member of the OECD's Business and Industry Advisory Committee (BIAC), and contributing to OECD studies, meetings and workshops on a variety of issues including roaming, privacy and Near Field Communications (NFC).

In 2011, the GSMA stepped up its efforts to engage governments in dialogue by increasing its involvement with regional governmental organisations as well as global institutions. In addition to a long-standing associate membership with the Inter-American Telecommunication



Commission (CITEL), the GSMA now has associate memberships or participation agreements with the ATU, the APT and the European Conference of Postal and Telecommunications Administrations (CEPT). Participation in these institutions' projects and events is proving instrumental in strengthening the mobile industry's ties with the public sector.

The GSMA Government Programme

The GSMA's Government Programme provides a high-level platform for dialogue between the mobile industry and policy-makers. The programme has grown significantly as more governments take advantage of the unique environment the GSMA facilitates. Not only does the programme serve the mobile industry's policy advocacy needs, but it also helps consolidate and extend the industry's relationship with governments. The programme is targeted at senior government and industry representatives and the agenda is shaped to focus on current high impact issues. The events appeal to governments as they provide an opportunity to convene outside intergovernmental meetings and they facilitate knowledge-sharing and networking between senior government and industry representatives.

The Ministerial Programme is a key element of the Government Programme and is hosted annually alongside the Mobile World Congress in Barcelona. More than 130 countries plan to send government and regulatory delegations to the Ministerial Programme in February 2012. The delegations will attend the Leadership Summit to debate with industry leaders the evolution of the mobile Internet, before attending the Government Mobile Forum, which will explore the spectrum needed for mobile broadband, and policies to inspire investment in mobile broadband networks. The GSMA will also host regional public policy seminars covering Latin America and the Caribbean, Asia Pacific, and Africa and the Middle East.



The Ministerial Programme in February 2011 attracted approximately 450 government delegates from more than 130 nations and international organisations, including 55 Communications Ministers and Neelie Kroes, the European Commissioner for the Digital Agenda. The programme enabled policy makers and industry leaders to discuss strategies for shaping the future of the mobile industry and its potential to accelerate economic growth and advance social development around the world.

Another key element of the Government Programme is the Public Policy Forum, which will be hosted for the first time in Shanghai in June 2012, alongside the Mobile Asia Expo. This will be an opportunity to engage in dialogue with government decision makers from more than 40 APAC countries about policy-making focused on driving investment in and growth of mobile broadband in the Asia Pacific region.

In addition to the two flagship events, the Government Programme engages government and regulatory delegates in dialogue through specific events at the GSMA's Mobile Health Summit and Mobile Money Summit.

Government Leadership Award

Each year, the GSMA presents one country with the Government Leadership Award, which recognises world-class leadership in the establishment of sound telecommunications regulatory policies, based on clear principles that encourage private investment, such as policies that support transparency, competition and regulatory independence. In 2011, the Award was won by the Islamic Republic of Afghanistan, in recognition of the immense achievements made by the Afghan government in expanding mobile communications in the country and fulfilling the vision of telecommunications and ICT as enablers for socio-economic development. The award was presented to His Excellency Amirzai Sangin, Minister of Communications & IT, during the Ministerial Programme in Barcelona in February.

The Mobile Reputation Index

Recognising the critical importance of public-private sector dialogue, the GSMA carries out research on an ongoing basis into how the mobile industry is perceived by governments and how that perception is changing over time. Known as the Mobile Reputation Index, the programme collects and analyses feedback from ministers, regulators and international institutions on key issues, such as the mobile industry's contribution to society, transparency, pricing, roaming, network management, security and health.

At the end of 2011, the Index showed that the socio-economic benefits of both mobile and broadband connectivity are widely recognised. Most policy makers also recognise that mobile connectivity is taking on an increasingly fundamental role in the modern world. Some 70% of respondents said that the mobile industry's overall contribution to society had increased in the past year. Policy makers also recognise the industry's creativity, with about three quarters of the respondents agreeing that the industry provides innovative solutions.

Crucially, the survey also found that policy makers and regulators around the world believe that the mobile industry is improving the way it engages with and builds constructive two-way dialogues with governments. The growing mutual trust between the public and private sectors in the mobile industry will help to facilitate a business climate conducive to increased investment and economic recovery.



Chapter 7

Encouraging investment

Over the past two decades, mobile networks, offering voice and basic data services, have expanded to cover more than 90% of the world's population. Today, more than five billion people are connected to mobile networks worldwide. This communications revolution has been enabled by the global alignment of public and private sector interests: Governments opened markets, encouraged competition, provided stable regulatory frameworks and released harmonised spectrum in a coordinated way, stimulating an enormous wave of private sector investment. This investment generated unprecedented economies of scale that continue to drive costs down, enabling mobile operators to further expand services, lower prices and support new capabilities and applications.

While only 25% of the global population live within reach of fixed broadband networks, mobile networks could be used to provide affordable broadband services to both urban and rural communities across the world. Private investment, encouraged by the right incentives, could lead to a dramatic expansion in mobile broadband coverage.

Many people already rely on mobile networks for Internet access, helping fuel exponential growth in mobile data traffic in every region of the world, according to a series of observatories published by the GSMA in 2011. Global mobile data traffic climbed to 546 petabytes a month in 2011, more than double the figure in 2010. Industry forecasts suggest total mobile data traffic could increase eleven-fold to reach 6,254 petabytes a month by 2015.

Economic impact of telecoms investment

The use of mobile technologies greatly improves individuals' and organisations' productivity, making the allocation of resources more efficient and eliminating unnecessary journeys. Research has shown that mobile connectivity can accelerate GDP (gross domestic product) growth significantly (an increase of 10 percentage points in mobile penetration can boost annual GDP growth by 0.6 percentage points¹) and, could, therefore, play an important role in helping the global economy recover from the financial crisis.

Broadband is also a key economic growth engine. Faster broadband deployment in Europe, for example, could provide an incremental boost to GDP of €450 billion and create 1.8 million additional jobs, according to research for the European Commission². Moreover, these jobs are highly productive: More than six times the EU average, according to other research.³

Developing economies would also benefit from more broadband. A study by McKinsey found that bringing broadband penetration levels in emerging markets to the same level as in western Europe would add between US\$300 billion and US\$420 billion in GDP and generate between 10 million and 14 million jobs.⁴

In Africa, the mobile industry already contributes US\$56 billion to the regional economy, equivalent to 3.5% of total GDP, according to the *African Mobile Observatory*, which was published by the GSMA during 2011. The report also found that the mobile ecosystem employs more than five million Africans. However there remains huge untapped potential - 36% of Africans, within the 25 largest African mobile markets (the A25), still have no access to mobile services. The Observatory estimates that raising the whole region to 100% mobile penetration could add an additional \$35 billion to Africa's GDP, equivalent to a further 2% increase.

The mobile sector is also a major contributor to economic growth in Asia, according to the *Asia Pacific Mobile Observatory*, which was also published by the GSMA during 2011. In 2010, the mobile industry accounted for US\$485 billion, or 2.7% of GDP, across the 17 major countries in the Asia-Pacific region (the AP17), according to the report. Directly and indirectly, the Asian mobile industry also accounts for 11.4 million jobs. The Observatory estimates having a mobile-connected workforce generated a productivity gain of approximately US\$315 billion across the AP17 in 2010, up from US\$224 billion in 2008. This growth was largely due to an increase in the number of mobile-enabled workers (that is, the individuals who had access to a mobile phone), as well as an increase in the average AP17 wage.

¹ Waverman, Meschi and Fuss, *The Impact of Telecoms on Economic Growth in Developing Countries*, Africa: *The Impact of Mobile Phones*, Vodafone Policy Paper Series 2 (March 2005). McKinsey 2007 and Deloitte 2007 both conclude that mobile industry growth boosts GDP, especially in emerging markets

² MICUS for the European Commission (DG Information Society and Media): "Impact of Broadband on Growth and Productivity" 2008. Compares impact of worst and best case scenarios between 2006 to 2015 for the speed of adoption of broadband services across Europe (pp6-7)

³ CEBR for Telefonica: "The changing economic impact of the telecommunications sector in the EU" 2008

⁴ McKinsey & Company "Mobile broadband for the masses: regulatory levers to make it happen" February 2009



The Latin American Mobile Observatory, published by the GSMA in February 2012, estimated the annual direct and indirect economic contribution of the mobile ecosystem to be US\$175 billion, or 3.6% of regional GDP⁵. Mobile operators in Latam directly contributed US\$82 billion to aggregate GDP in 2010, or 1.7% of the total output of the region, while generating an estimated 573,000 jobs and supporting almost 1 million more. In Latin America, mobile technology is also enabling governments to achieve their information and communications technology (ICT) development goals. In particular, mobile broadband, which is already the main means by which Latin Americans access the Internet, is enabling the expansion of broadband coverage beyond the limited coverage provided by fixed-line networks.

Impact on public funds

The public sector can expect to receive greater tax receipts as the mobile industry grows and stimulates the creation of new businesses. In 2010, European mobile operators contributed €65 billion to public funds⁶, according to the GSMA's latest *European Mobile Observatory*⁷. In the Asia-Pacific region, the mobile industry generated almost US\$300 billion through various taxes and fees in 2010⁸, while in Africa, every dollar invested by the industry generates around 75 US cents in tax revenue, on average contributing to 7% of governments' total revenue⁹. In Latin America, mobile operators contributed US\$40 billion to public funds in 2010, generated through corporate taxes, social security, income taxes, indirect taxes and regulatory fees (the mobile ecosystem's total contribution mounted to approximately US\$48 billion).

The right regulatory environment

A fundamental principal, established over the past decade, is the importance of stable, predictable and minimally intrusive regulatory environments. However there is now a trend of increasing regulatory intervention even when there is no evidence of market failure, including the use of taxation to extract industry revenues which are needed to invest in future growth. For example, the European Commission's proposals to accelerate the decline in termination rates for mobile services and to use retail price regulation threatens to remove €6 billion per annum or around 30% of total industry cash flow at a time when these funds are required to support investments in mobile broadband.

Meanwhile, in many developing countries, governments are promoting the concept of universal access using taxation schemes, but there is limited transparency around the distribution of funds. The governments in India and Malaysia, for example, are sitting on several billions of dollars collected from the industry over the past few years. In Latin America, Brazil intends to regulate the quality of broadband services without differentiating between fixed connections (a dedicated service) and mobile connections (a shared service), which could lead to unrealistic technical conditions on the provision of these services. In Chile, the deployment of mobile infrastructure has been affected by a new mast law that will make operators dislocate sites and could significantly reduce existing service coverage.

The role of taxation

In the modern world, mobile connectivity has become a near necessity, playing a central role in keeping individuals in touch with colleagues, business contacts, friends and family. Moreover, mobile services are key enablers for a country's economic and social development and are a vital tool that can deliver healthcare, education, financial inclusion and stimulate entrepreneurship, especially for those at the base of the economic pyramid. Yet some governments still seem to regard mobile services as a luxury, similar to caviar or jewellery, and consequently single out the mobile industry and its customers for special taxes, beyond normal value-added sales taxes. During periods of economic recession, the ICT industry is often seen as a "cash cow" and telecom-specific taxes tend to proliferate. While these taxes may solve short term budget constraints, they affect ICT diffusion and, in turn, economic development. This is essentially a policy inconsistency; on the one side governments try to promote investment and universalization of services while on the other telecom-specific taxes raise barriers to adoption by driving the prices paid by consumers upwards and thus reduce affordability.¹⁰

Several studies have demonstrated that mobile-specific taxes keep uptake and usage artificially low, hampering economic growth. Therefore, special taxes on mobile generally lower a government's overall tax intake in the medium term. Taxation reform could act as a driver to improving the accessibility of mobile services to all parts of society by lowering prices and breaking down barriers to adoption.



Reducing mobile taxes can actually boost public funds. In Kenya, for example, the removal of all taxes on mobile handsets in 2009 led to a 200% rise in handset sales and an increase in mobile penetration from 50% to 70%, according to research by Deloitte commissioned by the GSMA. As a result, mobile operators contributed a third more to the government in taxes and regulatory fees in 2011 than they did before the tax was abolished.

Global tax benchmarks

In 2011, the GSMA published a global benchmark study undertaken by Deloitte, analyzing changes in the level of taxation on mobile services and handsets since 2007. The study of 111 countries found that mobile taxes have increased in 56 countries and fallen in 42. For example, mobile users in the Democratic Republic of Congo and Madagascar are paying 50 per cent more tax today than they did in 2007. In the Gabonese Republic, Pakistan and Sierra Leone, mobile consumers are paying almost twice as much tax in 2011 compared to 2007, while the rate in Malaysia has almost tripled. In all of these countries, the increases are due to the introduction of excise duties on mobile usage known as "airtime taxes". By contrast, Ecuador, the Gambia and Thailand have all cut mobile taxes by half since 2007.

Worldwide, tax as a proportion of the total cost of mobile ownership (TCMO) increased by 0.7 percentage points on average, to 18.1 per cent in 2011. The study found that 63 countries worldwide now levy mobile-specific taxes (above and beyond normal sales taxes) and 24 of these

countries are in Africa. Regionally, Central and Eastern Europe has the highest average tax as a proportion of TCMO, with Turkey maintaining the top spot (taxes account for nearly 50% of TCMO in Turkey). In the European Union, high VAT rates are responsible for the relatively high level of tax.

Asian consumers generally pay the lowest tax as a proportion of mobile service ownership, due to relatively low VAT rates and limited mobile-specific taxation. However, Pakistan ranks third worldwide with tax as a proportion of TCMO of 32 per cent, due to high fixed and variable taxes on mobile ownership and usage.

Taxes are also high in Bangladesh, where they account for 21% of TCMO. A GSMA study on the country found that tax and regulatory fees represented 54% of operator revenues in 2011 and operators contributed 275% more to public funds than in 2006. High and uncertain taxation of operators contributes to lower investment - in 2011 network capital expenditure is expected to be half 2007 levels. Consumers in Bangladesh, along with the government, would benefit if a more optimal tax structure was put in place.

Airtime taxes, in particular, can reduce consumers' usage of mobile services, especially in developing countries with low income levels. Consumers in Turkey continue to pay the highest tax on airtime at 43 per cent, followed by the Gabonese Republic at 36 per cent, Pakistan at 31 per cent, Uganda at 30 per cent, Croatia at 29 per cent, and Tanzania, the Dominican Republic and the Democratic Republic of Congo, all at 28 per cent.

In some Latin American countries, airtime taxes have been on the rise - for example, in Colombia mobile users are paying an additional 4-percentage points in VAT to support participation in the Pan-American Olympic Games (a similar surcharge of 1% has been imposed in Argentina).

At the same time, taxes on handsets can be a major barrier to uptake, preventing people on low incomes from becoming connected in the first place. In some countries, taxes can make handsets very expensive. Mobile consumers in the Gabonese Republic pay 80 per cent tax on handset purchases, followed by Niger at 65 per cent and Argentina at 62 per cent. Consumers in Brazil, Cameroon, Congo Brazzaville, the Democratic Republic of Congo, Guinea, Madagascar, Rwanda and Uzbekistan all pay more than 40 per cent tax on handset purchases.

⁵ AT Kearney for GSMA "Latin American Mobile Observatory" 2011 covering 20 largest regional economies.

⁶ This figure represents both direct (ie. VAT) and indirect taxes (ie. employees income tax)

⁷ AT Kearney for GSMA "European Mobile Observatory" 2011

⁸ The GSMA's Asia-Pacific Mobile Observatory 2011

⁹ Frontier Economics for GSMA "Taxation and the growth of mobile services in sub-Saharan Africa" 2008

¹⁰ Telecom Advisory Services "The Impact of Taxation on the Development of the Mobile Broadband Sector" 2010



Surcharges on international inbound traffic

Some governments have begun imposing a surcharge on termination rates for inbound international calls. This surcharge on international inbound traffic (SIIT) raises the cost of connectivity, which has a negative impact on international trade, businesses and consumers. Where a SIIT has been imposed, the level of inbound international traffic has fallen and prices of outbound calls have increased as other countries have reciprocated by also imposing higher termination rates for international traffic.

These surcharges have had the following impact where they have been applied:

- In Congo Brazzaville, the price of inbound traffic has risen by 111 per cent and operators report that inbound traffic fell by 36 per cent between May 2009, when the tax was introduced, and May 2011;
- In Gabon, the price of calling the country from abroad rose by 82 per cent when a SIIT was imposed in August 2011;
- In Senegal, prices for inbound calls rose by 50 per cent and operators report that the number of international call minutes terminated on their networks decreased by 14 per cent;
- In Ghana, prices for international inbound calls rose by 58 per cent and operators report a 35 per cent decrease in international call minutes terminated on their network in the month after the imposition of a SIIT compared to the month prior to its introduction.

Although other governments are considering imposing a SIIT, the government of Gabon has recently announced its intention to scrap the tax.

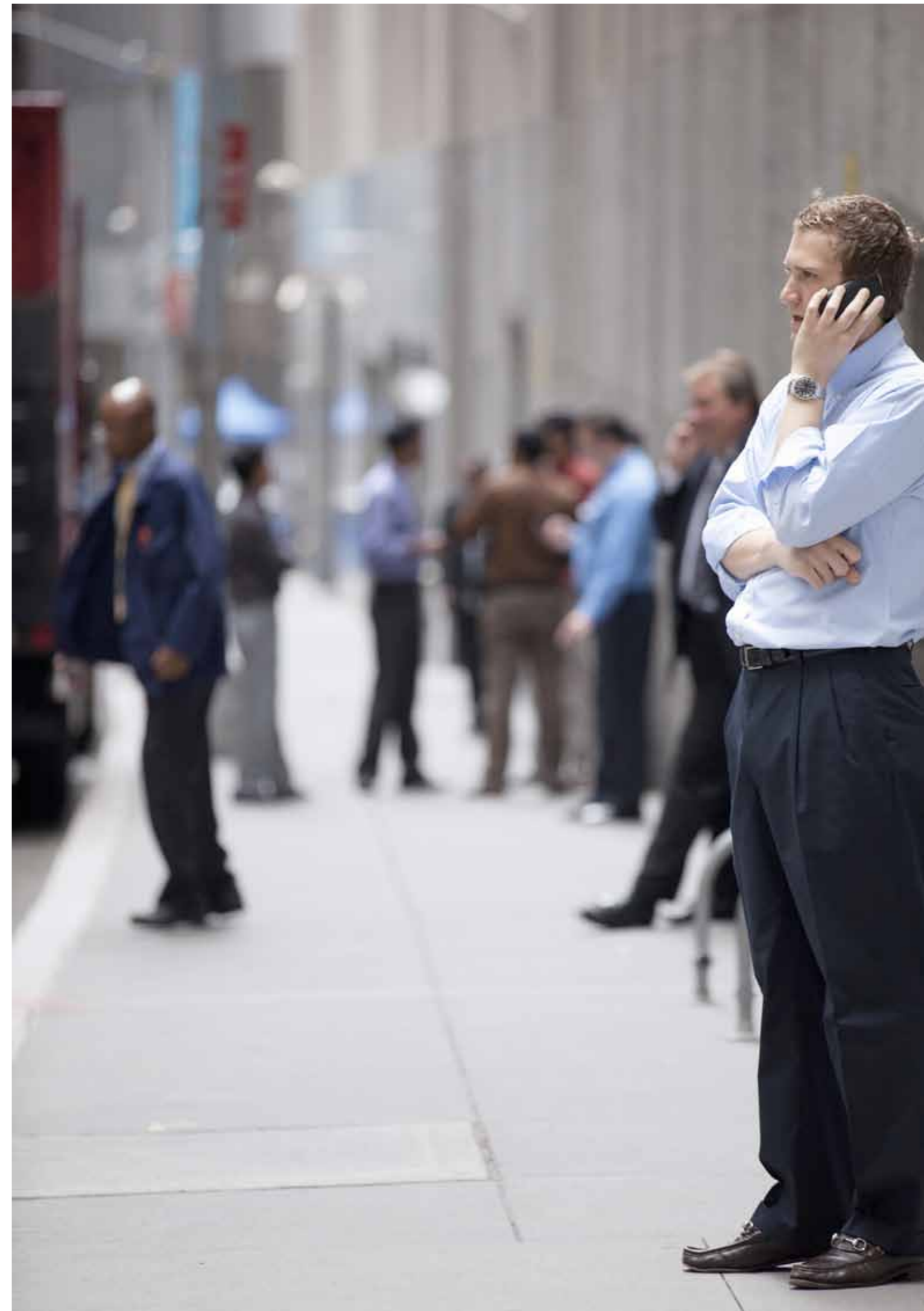
The role of research

The GSMA's research into tax is well received and often used by industry, government and other stakeholders, such as the World Bank, to make the case to finance ministries that mobile-specific taxes should be abolished. The GSMA's case study on Kenya, published in 2011, shows how lowering mobile specific taxes can have a positive impact on industry growth and the total level of taxation paid by industry to governments.

GSMA research in other countries has found that raising mobile taxes can reduce usage and investment in network infrastructure. In 2009, the Croatian government imposed a 6 per cent excise duty on airtime. The proportion of industry revenue that was paid in mobile specific tax and fees doubled to more than 10%. Minutes of traffic fell by around 5 per cent, while industry capital expenditure fell by around 40 per cent. In 2011, the Croatian government announced its intention to scrap the tax.

In 2011, the United States government imposed a five-year freeze on any new state and local taxes imposed on mobile phones and services. The move reflects a consensus that new taxes on mobile services are deterring the spread of mobile technology.

In 2012, the GSMA plans to carry out further detailed case studies on countries where the global benchmark highlighted significant decreases and increases in taxation levels: The GSMA is aiming to build up a body of best and worst practise examples that can be used globally to show, based on audited evidence, the reasons why industry-specific taxation should be lowered or removed.



Chapter 8

The Public Policy Leadership Team



Tom Phillips
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Tom joined the GSMA in 2004 and is responsible for leading the GSMA's public policy agenda with governments, regulators and policy influencers, globally. Before joining the GSMA, Tom was Group Director, Public Policy with Cable & Wireless. He has also held senior positions with PA Consulting Group's London practice, mobile operator Orange and British Aerospace. Tom has a degree in Physics and an MBA, and is a Chartered Engineer. He has over 25 years' experience in the telecoms industry.



Martin Whitehead
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Martin joined the GSMA in 2008 and heads up the Brussels office. He oversees all the activities of GSMA Europe, representing European mobile operators on a broad range of public policy matters covering everything from spectrum to roaming. Before joining the GSMA Martin held various government and private sector roles in Brussels, including five years with the U.S. Department of Commerce, advising American companies on EU policies and processes, and four years as a member of the European Commission's Single Currency Communication Task Force. He is a graduate in Economics and Sociology from Bristol University in the UK.



Sebastián Cabello
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Sebastián is responsible for representing and leading GSMA activities in Latin America, having joined in 2006. He is an industry expert on public policy aspects of the mobile broadband market and the use of mobile spectrum. He is a Member of the National Committee on Spectrum of Colombia. Prior to joining the GSMA, Sebastián worked as Market Research Director at TechPolis and as a consultant on international trade issues for the Foreign Affairs Ministry of Argentina and the Organisation of American States (OAS). He holds a master's degree from the Graduate School of International Relations and Pacific Studies (IR/PS) of the University of California, San Diego (UCSD) with a specialization in International Economics and a Licenciado degree in Economics from Universidad Nacional del Sur (Argentina). In 2003, he received Fulbright Grant.



John Giusti
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John Giusti serves as the Head of Spectrum for the GSMA. In this role, in collaboration with the membership, he directs the Association's full range of spectrum activities and represents it on critical spectrum policy issues with national governments and multilateral organizations. Prior to joining the GSMA, Mr Giusti worked at the US Federal Communications Commission. Most recently, he served as Chief of Staff and Senior Policy Advisor to Commissioner Michael Copps. Mr Giusti also previously ran the FCC's International Bureau, where he managed the FCC's relationships with its foreign counterparts and served as the FCC's chief negotiator at meetings of the International Telecommunication Union, the Inter-American Telecommunications Commission and other multilateral organizations.

Mr Giusti was educated in the United States, receiving his Juris Doctorate from Boston University School of Law and his Bachelor of Science in Telecommunications from the University of Florida.



Susie Hendrie
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Susie works in the Government and Regulatory Affairs team at the GSMA. She joined the organisation in 2006 and currently leads the Association's work on child online protection, including the management of the Mobile Alliance against child sexual abuse content, which is focused on combating illegal child abuse content on mobile networks. Susie works with the mobile operator community to develop policy positions related to child online protection. She engages with governments, regulators and NGO's to raise awareness of the efforts of the mobile industry in their work related to children and young people. Prior to this, Susie worked on other key policy and regulatory programmes at the GSMA on a range of subjects including international roaming, digital dividend spectrum and industry reputation. Before joining the GSMA she held various communications roles both in-house and in consultancy. She holds a Masters degree in Media & Communications Policy and Regulation from the London School of Economics and a BA (Honours) in Economics from Queen's University, Canada.



Pat Walshe
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Pat joined the GSMA in August 2009 as Director of Privacy, and is responsible for providing intelligence and insight into emerging privacy issues across the mobile ecosystem, and for working with members and other key stakeholders to establish a privacy framework to better protect the privacy of mobile consumers and the security of their data. Pat has over 13 years experience in privacy compliance and regulatory policy as a senior manager in the fixed, mobile and Internet sectors. He has represented the industry, and submitted position papers on a number of privacy matters. Pat has a degree in Social Anthropology and Development, and is a member of the British Computer Society and Irish Computer Society, as well as holding privacy and information security auditing qualifications.



Isabelle Mauro
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Isabelle joined the GSMA in 2000 and is responsible for developing and strengthening the Association's relationships and cooperation with governments, intergovernmental organisations and other stakeholders. Previously, Isabelle was the Director of GSMA Europe. She also has several years experience as a public affairs consultant in Brussels specialising in the field of Telecommunications and Audio-visual policies. Isabelle has a degree in Modern Languages and a Masters Degree in European Politics and Policy from the London School of Economics. She was an Erasmus scholar at the Fachhochschule of Cologne and at the Università di Torino.



Natasha Jackson
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Natasha joined the GSMA in 2005 and is responsible for leading the Association's work on consumer protection including the development and promotion of responsible self-regulatory approaches in the areas of privacy and online safety. Natasha leads the development of the GSMA's self regulatory initiatives including the Mobile Alliance against Child Sexual Abuse Content as well as the global code of practice on mobile spam and educational toolkits for mobile operators outlining issues and good practice in the areas of mobile content services and child protection. Before joining the GSMA, Natasha held international roles across fixed and mobile business in both blue chip and start up environments, including Cable & Wireless. She has over 15 years experience in the telecoms industry, holds a degree in Economics and sits on the Board of the Family Online Safety Institute (FOSI).



Gabriel Solomon
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As Head of Public Policy at the GSMA, Gabriel is a policy subject matter expert across the GSMA's portfolio. Gabriel currently leads the GSMA's work on capacity building, energy efficiency, net neutrality, tax and manages the Chief Regulatory Officer's Group, the executive body that oversees the GSMA's public policy project portfolio. Since joining the GSMA in 2005, Gabriel has established long standing partnerships with multilateral agencies such as the World Bank and ITU, and has led the GSMA thought leadership programme, ensuring that the GSMA plays an influential role in shaping the global regulatory agenda.

Prior to the GSMA, Gabriel worked as a management consultant with Oliver Wyman as a strategy and market entry specialist. Gabriel started his career in finance with the Rothschild Group and has a MBA from INSEAD. He sits on the Boards of the UK Telecoms Academy and the Manobi Development Foundation.



Yiannis Theodorou
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Yiannis is responsible for managing and supporting a number of GSMA Public Policy initiatives. Yiannis is currently focusing on GSMA's work on mobile privacy and has been leading the GSMA's research programme on mobile users' attitudes towards their privacy. Yiannis has been engaging with GSMA members and industry stakeholders at various public fora globally, promoting GSMA's self-regulatory initiatives. He has also advised and developed toolkits for GSMA members outlining issues and good practice in areas such as prepaid SIM card registration.

Before joining the GSMA, Yiannis worked as a Strategy Associate at Ofcom, where he gained five years of experience in strategy and regulatory policy in the fixed, mobile, internet and TV sectors. Yiannis holds a postgraduate degree in Management and a Law degree.



Dr. Jack Rowley
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Jack joined the GSMA in 2000 and is responsible for the Association's activities and external relationships relating to the safety of mobile communications, good environmental practices and responsible mobile phone use. This includes safety concerns related to masts and devices; energy consumption and recycling; mobile use while driving and other etiquette issues, and electromagnetic compatibility. Before joining the GSMA Jack spent 10 years in industry in Australia, working in research management, training and public policy. He has a PhD in antenna design and more than 90 publications and presentations to his name.



Marina Solin
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Marina is the Regulatory Director for the NFC Go-to-Market Programme at the GSM Association. Her aim is to liaise with regulatory authorities to create conditions that help accelerating commercial NFC deployments. Marina has over 10 years of experience in dealing with regulatory issues on behalf of the telecoms industry, having worked on a European Commission project providing the regulatory analysis for accession negotiations of Eastern European countries in the field of telecoms, as well as working in the Representative Office of 'Deutsche Telekom' in Brussels. Marina holds a MSc from University of Konstanz and a MSc from London Business School.


Jeanine Vos

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Jeanine is leading the global mobile health programme at the GSMA, which aims to stimulate the development and take-up of sustainable and scalable mobile health solutions. Jeanine is responsible for defining the strategic direction of the programme, working closely with member companies as well as stakeholders across the healthcare ecosystem, to identify, prioritise and execute activities and communicate findings.

Prior to this, Jeanine managed key policy and regulatory programmes at the GSMA, including IP networks and net neutrality, international roaming, and economic and social benefits of mobile.

Before joining the GSMA in 2005, Jeanine worked in the mobile industry on Public Policy and Strategy. She holds an MSc from the Delft University of Technology and an MSc from the London School of Economics.


Dr Mani Manimohan

Policy Director
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Mani joined the GSMA this year bringing with him more than a decade of experience in telecoms technologies, markets and regulatory policy. As Policy Director, he works with industry and policymakers at the global level in developing and communicating the mobile telecoms industry thinking on a range of topics. Prior to joining GSMA, Mani worked with large technology firms, startups, consultancies and a regulatory authority leading initiatives across a number of areas, including full life-cycle technology developments, product and standards strategy, network and cost modelling, policy making and merger assessment. Mani is a Master's Scholar with a First Class Honours degree and a Doctorate in Engineering from the University of Cambridge, where he is also a guest lecturer.


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At the GSMA Herman and his global team of policy experts are responsible for the execution of a wide range of "spectrum campaigns" across Africa/Middle East, Latin America and Asia Pacific. Herman has over a decade of experience as a business and policy advisor to multinational companies and trade associations in the ICT sector. Previously he was public affairs leader for EMEA at Waggener Edstrom Worldwide – a global communications' agency – where he worked with a number of clients in the ICT sector on media and public policy issues. Before joining Waggener Edstrom Herman worked for British Telecom in a variety of roles ranging from product operations, to sales and European public affairs. In 2008 Herman acted as interim Director of GSMA Europe. Herman has an MBA from Henley Management College and a masters in political science from the University of Groningen in the Netherlands.


Alix Rothemund

Policy Manager,
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Alix joined the GSM Association in London in 2011 as a policy manager in the spectrum team, where she works on public policy campaigns across Africa and the Middle East, Latin America, and Asia Pacific. Prior to joining the GSMA, Alix was European public affairs manager at Waggener Edstrom, a global consultancy, where she provided strategic advice to blue chip companies in the ICT sector. She holds a master degree in political science and speaks French, English, Spanish and German.


Belinda Exelby

Director, Institutional Relations
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Belinda joined the GSMA in 2007 and works on developing and maintaining the Association's relationships with governments and international institutions, including the ITU and the OECD. Belinda is responsible for the GSMA campaign to manage mobile industry input into the ITU's revision of the International Telecommunications Regulations in 2012. She is also responsible for the Mobile Reputation Index project, which monitors, tracks trends and reports on the perceptions of the mobile industry held by government stakeholders around the world. Previously, Belinda was Project Marketing Director for the Public Policy team at the GSMA, a role to which she brought more than 15 years experience of marketing within the ICT industry. She holds a BA in French & Linguistics from the University of Exeter.


Joanna Maberly

Government Events Project Manager
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Joanna leads the organisation of the GSMA's Government events held throughout the year. Her primary focus is the Ministerial Programme, which takes place each February in Barcelona in conjunction with Mobile World Congress. She also manages other events with governments including Public Policy Forum, Mobile Health Leadership Forum and Mobile Money for the Unbanked Leadership Forum. Joanna holds a B.Speech Pathology (Hon) from the University of Queensland.


Roberto Ercole

Director, Spectrum
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Roberto joined the GSMA in 2006 and is responsible for leading the Association's work in the ITU-R. In 2007 Roberto led the GSMA team at the ITU World Radiocommunication Conference, helping to secure harmonised UHF spectrum for 3G services. Before joining the GSMA, Roberto worked for Oftel, where he was a senior policy adviser and chief adviser on spectrum competition issues; for the UK's Radiocommunications Agency; for UK mobile operator one2one, and as an independent spectrum and telecoms consultant. Roberto holds a degree in Applied Physics and a Masters Degree in Electromagnetic Compatibility. He is a Chartered Electronic Engineer specialising in radio systems. Roberto also holds a post graduate diploma in competition law and policy.


Peter Lyons

Director of Spectrum Policy, Africa and Middle East
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Peter Lyons is a thought-leader and strategist at the GSMA, acting as regional lead for spectrum policy in Africa and the Middle East. Prior to joining the GSMA, Peter was an Equity Research Analyst on Wall Street from 2006-2010, advising leading hedge funds on investments in emerging market telecom, media, and technology companies. Peter began his career in the late 1990s as a project manager in Motorola's Mobile Commerce Core Solutions Centre and co-authored one of the company's first mobile commerce related patents in 2001. Peter holds an MS Telecommunications Systems from DePaul University and a BS in Economics from Purdue University.


Chris Perera

Senior Director, Spectrum Policy & Regulatory Affairs – Asia Pacific
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Chris Perera joined the GSMA in June 2011 with 13 years of experience in spectrum management and regulatory policy.

Prior to joining the GSMA, Chris was the Chair of the New Zealand Radiocommunications Sector and worked for the New Zealand Government and New Zealand Spectrum Regulator. Chris was the Principal Wireless Advisor on the evaluation panel for the New Zealand Government's Broadband Initiative. She was the Auction Manager for the 2.3 GHz and 2.6 GHz spectrum auctions held in New Zealand. Chris also worked for the New Zealand Mobile Operator Telecom New Zealand, as their Spectrum Investment Manager and Adviser on Mobile Technologies for 6 years.


Laszlo Toth

Policy Director, GSMA Europe
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Laszlo joined the GSMA in 2011. In addition to managing the Regulatory Operator Expert Group, Laszlo is responsible for the consistency of our positions across the full range of European issues we cover. He ensures that our outreach work to the EU institutions is effectively coordinated within the GSMA, and works closely with members to facilitate coordinated advocacy efforts at the EU level. Prior to joining GSMA Europe, he spent nine years at the Hungarian public administration working on regulatory and policy-making issues, including spells at the Ministry responsible for ICT and at the national telecoms regulator. Laszlo has a MSc. in economics and holds a degree in computer sciences.


Kiki Walravens

Media and Communications Director, GSMA Europe
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Kiki joined the GSMA in 2003 and is responsible for managing GSMA Europe's internal and external communications. In particular she handles member and media relations and ensures the coherence, clarity and consistency of GSMA's message delivery. She also manages the M-Commerce Operator Expert Group and is responsible for supporting our government affairs work with a varied and carefully targeted events programme. Before joining the GSMA, Kiki worked in marketing communication functions for Sonera Belgium and UB Networks. Kiki holds a Masters Degree in translation, specializing in French and Russian, and a Marketing and Advertising Degree from the VUB/ Business School Solvay.


Claire-Marie Healy

Policy Manager, GSMA Europe
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Claire-Marie joined the GSMA in 2008 and manages GSMA Europe's Frequency, and Health and Environment Working Groups. She also has responsibility for coordinating our contribution on a number of specific projects, including spectrum, embedded utility, and energy efficiency. She also leads the seminar programme to keep members informed and up to date on relevant regulatory, technology, and market developments.

Prior to the GSMA, Claire-Marie worked for the GSMA's Development Fund in India, and for the OECD's Business Advisory Council in Paris.

She holds a Masters degree from the London School of Economics in Political Science and is currently finalising a Master in Marketing and Advertising at Solvay Business School. In addition to her native French, she speaks fluent English, Spanish and effective German.


Dagmar Baer

Policy Assistant, GSMA Europe
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Dagmar joined GSMA in 2011 to support the Brussels office in the coordination and implementation of GSMA's EU Roaming project. Before joining the GSMA she spent five years in the European Commission devising and executing communication campaigns in a range of different EU policy areas such as enlargement, the Single Market and the introduction of the euro. Dagmar has a Master's Degree in Communications, Psychology and American Studies from the Ludwig-Maximilians-University in Munich, and a Master of Business Administration (MBA) from United Business Institutes, Brussels.


Michela Palladino

Policy Assistant, GSMA Europe
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Michela joined GSMA in 2011 and supports her colleagues across the full range of issues, projects and events managed out of the Brussels office. In particular she monitors and reports on developments in EU policy and legislation that are relevant to our members. She is also responsible for providing policy support on child protection issues as well as GSMA's m-Education initiative and IPR Task Force. Before joining the GSMA office in Brussels, she worked for the European Parliament and the Italian Permanent Representation to the EU. Michela holds two Master's degrees in International Relations and Human Rights International Protection and speaks fluent Italian, English, Spanish and French.


Nitin Sapra

Regulatory Affairs and Spectrum Policy Advisor,
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Nitin Sapra joined GSMA in Nov 2011 as Regulatory Affairs and Spectrum Policy Advisor and work closely with the Spectrum team and support the wider GSMA Government & Regulatory Advisory team in providing insight, knowledge and analysis on the Indian market. He is also responsible to anticipate and respond to spectrum related policy decisions in India in conjunction with local mobile operators and the wider GSMA team. He also supports local mobile operators in India. Prior to joining the GSMA, Nitin held the position of Deputy Manager with Cellular Operators Association of India for 5 years, engaged in a wide range of spectrum and some regulatory policy issues. Nitin has an Engineering Degree in Electronics and Communication and Post Graduate in Wireless Communications.


Matias Fernandez Diaz

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Matias currently serves as Regulatory Manager at GSMA Latin America. (since April 2011). He coordinates the Legal & Regulatory and Security & Fraud Working groups within the region. Prior to his current position, Matias served as Research Analyst. Prior to his appointment at GSMA, he worked at IBM Global Delivery Center in Buenos Aires, Argentina.

Matias is completing his Masters in Telecommunications Services in the San Andres University and holds a Baccalaureate in Political Science (2005) from the Universidad Catolica Argentina.


Bernardita Oyarzún

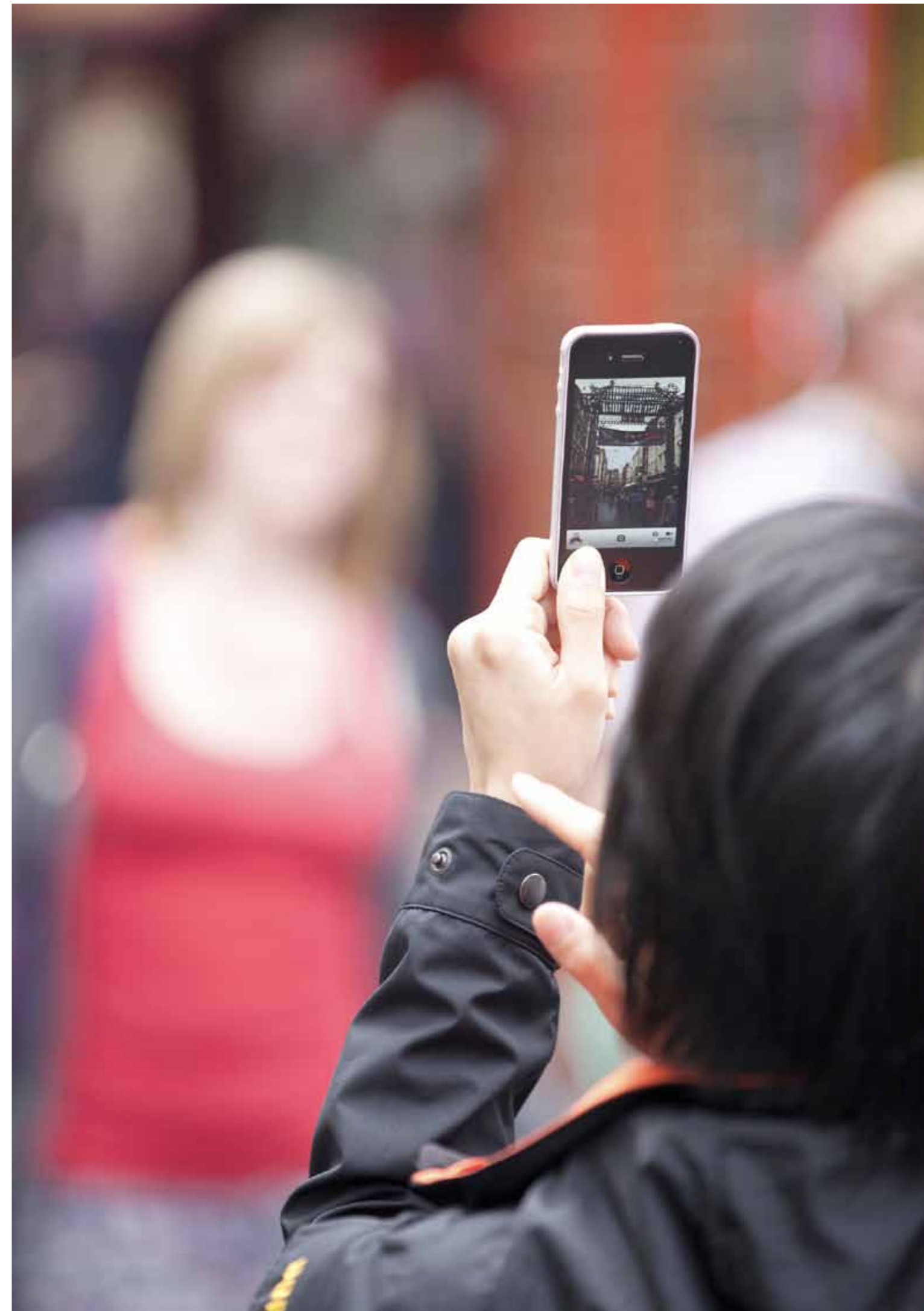
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Bernardita joined the GSMA in June 2005 and is responsible for marketing activities, sponsorship and event organization of GSMA Latin American office. She has been responsible of coordinating GSMA LA plenary events for the last 5 years and developed the GSMA LA Vision Magazine. Before joining the GSMA, Bernardita was Regional Marketing Coordinator at Microsoft and worked for advertising agencies such as Young & Rubicam (for Colgate Palmolive global account) and Lowe among others. She has over 17 years of experience in the marketing and advertising areas. Bernardita holds a degree in Marketing and Advertising from the Universidad Diego Portales, Chile.


Alexis Arancibia

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Alexis joined the GSMA in July 2005 and is responsible for conducting GSMA LA technology and business-related initiatives. He coordinates operator expert working groups and task forces and helps operators develop industry positions. Alexis also represents the GSMA in international forums such as CITELE and Regulatel and is key regional spokesperson on roaming issues. Before joining the GSMA, Alexis built a broad experience in business/projects management and products development in multinational companies such as Ericsson, Agfa and BellSouth, with over 15 years' experience in the telecoms industry. Alexis has a degree in Electronic Engineering and an MBA from the Universidad de Chile. Besides his native Spanish, he speaks fluent English, and effective Portuguese and Italian.





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