decision-making under scientific uncertainty:

the case of mobile phones

“green alliance...

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Green Alliance

Green Alliance is one of the UKs foremost environmental organisations. An independent charity, its mission is to promote sustainable development by ensuring that the environment is at the heart of decision-making. It works with senior people in government, parliament, business and the environmental movement to encourage new ideas, dialogue and constructive solutions.

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introduction

A recent ICM/Guardian poll threw up some interesting facts about mobile phones. Nearly two-thirds of people in the UK now use them, but half the population is worried that these phones may be a health hazard.[1] This fact points to a central dilemma: how can people benefit from new technology while feeling that potential risks to human health or the environment are being investigated and handled properly?

This question is not new. Some of the most difficult environmental and health issues that policy-makers face are those where there is risk or scientific uncertainty – uncertainty about cause, about effect, or about remedy. Scientific uncertainty is inherent in issues as varied as genetic modification, climate change and childhood vaccinations. The uncertainty associated with mobile phone technology was highlighted by The Stewart Report, an independent, official enquiry.[2] Whilst pointing out that "the balance of evidence to date" did not suggest significant risk, the report emphasised "the gaps in knowledge" that necessitate very careful handling of the issue.

"how can people benefit from new technology while feeling that potential risks to human health or the environment are being investigated and handled properly?"

For BT's stakeholders, including its employees and customers, as well as the public at large, there is a real need to address concerns about the potential health risks of mobile phones and 'base stations' – the masts or much smaller and increasingly invisible 'micro' and 'pico' cells that make the mobile phone infrastructure work. BT Cellnet recently paid £4 billion for a 3G spectrum licence – £22 billion was paid in total, by BT and four other companies – in order to develop the next generation of mobile phone services. It has been estimated that rolling out this service will require tens of thousands more base stations or masts across the UK, in addition to the 20,000 already in place. This is a very significant expansion.

There is a considerable amount of opposition to these plans, in particular from those who object to masts being sited near schools, hospitals or residential areas. Objections are made about possible health effects, visual amenity and the effect of the masts on house prices. New organisations, like Mast Action UK, have sprung up to put across residents' points of view and

oppose certain developments, and around twelve local authorities have imposed bans on mobile phone masts on local authority-controlled land.

This report looks at how BT approaches this matter, given the scientific uncertainty surrounding the issue of mobile phone and mast use. It describes BT's current approach, and offers recommendations for the future. It does not attempt to answer the question of whether there are any significant risks. It makes no judgement on the scientific evidence available or the significance of the uncertainty. Its starting point is as follows: The Independent Expert Group on Mobile Phones published 'The Stewart Report' in May 2000,[3] stating that there is still scientific uncertainty surrounding the potential health risks of mobile phones. Given this scientific uncertainty, how should BT, or any responsible company, respond?

This report builds on previous work undertaken by Green Alliance on the issue of decision-making under risk or scientific uncertainty.[4] It is based on this work, and a review of documents on the specific issue of mobile phones, together with a series of telephone interviews with stakeholders within BT and from elsewhere. A list of those consulted is included as a footnote.[5]

decision-making under scientific uncertainty: the case of mobile phones

A risk, by its very nature, only involves a chance, or possibility, of adverse effects. Each risk entails potential benefits and potential costs. The aim of any policy should be to make the most of the benefits, whilst doing as much as possible to minimise potential risks. This sounds simple, but it poses an immense challenge to policy-makers, especially when dealing with complex problems that have effects over wide populations, or long timescales.

It is very important to distinguish between a strict 'risk' and uncertainty. Technically speaking, a risk involves knowledge of both likelihood and potential effect. When tossing a coin, you know that there is a one-in-two chance of a favourable outcome, and a one-in-two chance of adverse effects. Yet many environmental and health risks, as in the mobile phone debate, are not 'risks' in this strict sense. In these cases, there is limited knowledge about the likelihood of adverse effects, or what these adverse effects might look like. Standard tools of risk assessment are inadequate in such situations, as they require knowledge of likelihood, and of effects. Without this information, policy-makers need to turn to more complex ways of decision-making, that take account of uncertainties, rather than hiding them away.

"The aim of any policy should be to make the most of the benefits, whilst doing as much as possible to minimise potential risks"

For BT, the scientific uncertainty surrounding the potential health risks of mobile phones poses a challenge to company strategy. Mobile phones, and related technology, provide significant benefits to people and the economy. They are fast becoming an integral part of modern society, and third generation mobile systems will develop this further, by bringing access to email, internet and other services via mobile phones. This growth in mobile communications has brought social and economic benefits including flexible work and life patterns, personal safety, and better access to emergency services. It is clear, then, that any potential risks must be considered alongside the significant benefits that mobile telecommunications provide.

So what might those uncertainties be? The Stewart Report stated that "the balance of evidence to date" points to the fact that the use of phones by adults "do[es] not cause adverse health effects to the general population," but that it is not possible to say that radiation from phones and masts "is totally without potential adverse health effects, and that the gaps in knowledge are sufficient to justify a precautionary approach."[6] In other words, despite the clear benefits

that mobile phone technology has brought us, there is still scientific uncertainty surrounding the potential health effects of mobile phones. Any policy response should take this into account.

Green Alliance's work in this area puts forward a number of themes that it believes policy responses to risk and uncertainty should address:

- Public involvement in decision-making, in both government and business.
- A precautionary approach to decision-making.
- A clear understanding of the value – and limitations – of science and scientific evidence.
- Putting decisions within a wider policy context, and considering the big picture.
- Foresight and hindsight – preparing for future trends, and learning from past experience[7].

In this report, the issue of mobile phones and phone masts will be examined in the context of each of these themes. Although all are relevant to the case of mobile phones, the first three are perhaps most salient, and this report concentrates on the issues of public involvement, a precautionary approach, and the role of science. First, though, the report examines BT's approach to these issues in general.

BT's policy-making structures

BT's Statement of Business Practice, *The Way We Work*, sets the context for BT's ethos and approach, committing the company to 'care for the health and safety of each other, our products and our operations.'

Overall, BT's approach to the mobile phone issue is informed by the guidelines and standards set by the National Radiological Protection Board (NRPB), the Independent Expert Group on Mobile Phones (IEGMP) and the International Commission on Non-Ionising Radiation Protection (ICNIRP).

At an operational level, BT's approach to the mobile phone issue is guided by a central group, the 'wireless issues steering group', consisting of a number of senior employees from across the company, including public relations, legal services, technical services, BT Cellnet (the mobile phone 'arm' of the BT group) and the Chief Medical Officer. This group provides a forum for debate within the company, and sets the policy framework. An 'issues manager' is responsible for co-ordinating BT's position, and representing it to the public and other stakeholders. The group also considers practical issues such as improving stakeholder involvement, mast siting, site sharing and provision of information. Particular issues – such as cases where local residents have expressed objections to a phone mast – are dealt with by the BT representatives in the area, or by the particular company involved – usually BT Cellnet.

BT works closely with the industry body, the Federation of the Electronics Industry (FEI), and the FEI expressed its position in its response to the Stewart Report.[8] Much of BT's contribution to the public policy debate is mediated through the FEI, who have a dedicated team working on these issues. The relationship between the FEI and BT on these issues is managed by the wireless issues steering group.

public involvement

High profile political controversies like genetically modified food and BSE, as well as widely publicised scientific uncertainties and disagreement over health issues like vaccination and the safety of waste incinerators, have had a profound impact on public confidence in the ability of politicians and experts, whether in government or the private sector, to make decisions on issues involving scientific uncertainty. There is a danger, too, that every new crisis will erode confidence further, and damage the legitimacy of science, or the reputation of companies. Increasingly, issues of environmental or health risks are seen as social and political problems, to be tackled by society, not just science. People are interested in, and concerned about, the wider impacts of new technologies, and are asking to be involved in decisions that might affect them. There is a growing recognition that participatory approaches are a necessary part of good decision-making, and of rebuilding public trust in companies and the regulatory system.

There is significant public concern about the potential health effects of mobile phones and phone masts. Though people recognise the benefits of the technology, they worry about potential effects on health, and in particular, they worry about whether they are being told the full story. Sensitised by the BSE controversy, and by the political row over genetic modification, the public are not willing to accept bland reassurances about the safety of any new technology, but are asking to be involved in decision-making processes. Organisations like Mast Action UK have sprung up to provide a focus for concern and involvement. As they write, 'How well we remember the then Environment Minister trying to feed a beefburger to one of his children, to show that beef was safe at that time. This with hindsight shows the lengths they will go to cover up the truth... the golden goose of the mobile phone industry must never be allowed to be the mad cow (BSE) of the future.'[9]

"the public are not willing to accept bland reassurances about the safety of any new technology"

It is often said that 'the public' cannot deal with risk, and need to be presented with hard facts and absolute certainties. This is far from true. One of the key findings of research in this area is that the public understand scientific uncertainty, and are prepared to deal with it.[10] In the case of mobile phones, the Stewart Report made it quite clear that there was scientific uncertainty about health effects, yet most people continue to use phones, feeling that the actual benefits outweigh the potential risks.

It is clear, then, that people can make sophisticated judgements about benefits, risks, and uncertainties. Individuals make complex decisions about

risks every day. They factor a whole range of issues into their decisions, asking questions like, "What is the evidence? What are the uncertainties? Who is providing the information, and what are their interests? Who benefits from the risk?" People are willing to live with risk, if they understand the purpose of that risk. What causes alarm is often not the risk itself, but the denial of it. People are very sensitive to attempts to cover up risk or uncertainty, and it is the denial of uncertainty that leads to distrust.[11]

"What causes alarm is often not the risk itself, but the denial of it"

People are less willing to accept risks that they feel they have no control over. This may, in part, explain why there is much greater disquiet about mobile phone masts than the phone handsets themselves. The individual has far greater control over whether they use a phone, and for how long, than they do over the phone masts themselves.

Being honest about risk, and facing up to this issue of control, means that there is a need for ways to communicate uncertainty and complexity, and to allow two-way dialogue.

It is important to draw a distinction between information and involvement. The traditional – and still very influential – view is that the public cannot cope with risk because they do not understand the science, and they have not received sufficient information, or education, to deal with the issue in question. According to this view, often called the 'deficit model,' it is assumed that the 'experts' have all the information necessary, whilst the public are seen as having a 'deficit' of information or understanding. It follows that if people are educated, and given better information, they will see things differently. This is the thinking behind programmes of 'public understanding of science' and 'information campaigns'. These one-way flows of information, from experts down to the public, aim at correcting the perceived deficit.

Recent experience, however, has shown that it is not information that people lack, it is involvement, or an element of control over the issue in question. When people have concerns, they do not want to be presented with a one-way information flow. They want to feel that they, either individually or through representatives, have a stake in the decision – that it is, in some sense, a two-way interaction.

This approach also tends to assume that the experts have all the information they need – in other words, that there is no scientific uncertainty. Information, by its very nature, focuses on what is known, whereas concerns often focus on the unknowns or uncertainties. People lose their trust in experts when their views are met with just more information provision, which points out how right the experts are, and which plays down uncertainties and potential risks. Instead, experts need to be aware of

the limits to their knowledge, and ways need to be found to involve the people affected by decisions. It is not just the public that benefit from these two-way processes – often, different types of knowledge and different approaches can shed new light on a problem.[12]

Researchers have developed a wealth of tools and techniques for involving the public. Methodologies include citizens' juries and panels, consensus conferences, focus groups and deliberative polls. Of course, these methods can be time-consuming and expensive, but any calculation of cost should be weighed up against the cost of inaction, in terms of loss of public trust and rejection of the technology – this has been shown clearly in the case of genetically modified food.

"Involving the public in decision-making...allows for greater predictability"

Involving the public in decision-making helps reassure them that the right decisions are being made, through allowing them to play a part in the process. It is also useful in other ways for the industry. It allows for greater predictability, as industry can judge public reactions to new technology much earlier in the process. It averts crises, through preventing a backlash against decisions at a later stage.

In summary, Green Alliance believes that any company tackling issues involving risk and scientific uncertainty should:

- Be open and honest with the public about potential risks, and about gaps in scientific understanding.
- Involve the public – its own customers, and others affected by the company's actions – in its decision-making.
- Find appropriate participatory techniques both to measure opinions, and to include these opinions in its decisions.

BT's approach to public involvement

As outlined above, it is essential for any company dealing with an issue involving scientific uncertainty to be open and honest with the public about potential risks; and to involve the public in its decision-making through appropriate techniques.

The biggest challenge for BT in this area is to deal with the significant levels of public unease surrounding mobile phone masts. There has been considerable controversy, reflected in both local and national media, over the siting of phone masts.[13]

BT is still developing its approach to involving local communities in decisions about mast siting, following recent Department of Environment, Transport and Regions consultation. In its response to the Stewart Report last

year, BT recognised the need for better communications and more dialogue with communities, suggesting "proactive consultation with the local community," and "provision for meetings involving community representatives, planning authorities and operators." [14]

Together with other industry players, BT is addressing this challenge through a Federation of the Electronics Industry (FEI) initiative known as the 'Ten Commitments' – a code of practice on consultation with local communities. The first of these commitments is to develop, "with other stakeholders, clear standards and procedures to deliver significantly improved consultation with local communities."[15] The industry is currently undertaking a series of stakeholder consultations in defining the detail of these new procedures.

Interviews with BT representatives suggest that across the company, employees are very much aware of the need to involve the public. They are also aware of the problems that arise if this involvement does not happen – in particular, accusations of a 'cover-up,' and the likelihood of situations escalating into an oppositional confrontation. Some staff point out, however, that BT could do more to involve people at an earlier stage, and there is a need to develop more inclusive, less confrontational ways of decision-making.

Though the majority of masts are erected without incident, there have been a number of more difficult situations. In Scotland, for example, a series of encounters between BT and local residents in different areas followed a clear pattern. BT would try to erect a mast, then the community would object, on grounds of health, visual impact, or property values. In some cases, the strength of feeling was such that each house in the street displayed a protest poster. BT would then agree to consult with the community, and stop work on the mast. Consultations would then reveal that the community wanted the mast to be moved elsewhere and, faced with such strong resistance, BT would find a new site for the mast. The BT representative responsible felt that this was far too confrontational a way of dealing with the issue, and that a way needed to be found of involving people earlier in the process, in a more constructive way.

Recently, there have been moves to improve the way the issue is handled, and Wales has been used as a pilot area for a new approach. In Wales, BT has been working with political leaders and opinion formers to foster balanced debate around the issues, and to provide further information. Working through the new devolved administration, it offered information to Assembly Members, the business community, and the planning community about the benefits, and potential risks, of mobile telecommunications. It aimed to provide a broad context to the debate, by examining the social and economic benefits of mobile phones, as well as explaining the current state of scientific knowledge about health impacts.

However, as the previous section explains, there is also a need to draw a

distinction between information and involvement, and to avoid the 'deficit model' of thinking, whereby the role of the 'expert' is seen as providing information, and educating the public. There is a tension apparent in BT's position between the need to provide reassurance about the lack of risks identified so far; and the need to be upfront about gaps in the knowledge. A classic 'public relations' approach to the issue would be to accentuate the positives and downplay the negatives, and in our view elements of this approach are apparent within BT.

Some BT representatives saw BT's role as providing objective information, and reassurance, by pointing out the lack of real evidence of health risks. This was particularly the case in the Wales pilot project. Whilst this is useful, it is important not to restrict responses to a one-directional process of 'communication' from BT to a worried public. Instead, it is important to foster two-way involvement, and give people who may be affected by a decision the chance to play their part in that decision. BT Cellnet, who control the mast-siting process, are meeting these criticisms through recruiting officers to liaise with local communities, and this new system will be in place by mid-2001.

Most of the time, dialogue would reap dividends, because in general, people are not objecting to the mobile phone masts themselves, but to their particular location, or to the way that the company installing the mast has gone about their business. Trudy Dean, Leader of the Liberal Democrat Group on Kent County Council and a campaigner against many mast siting decisions, writes that, "we are not trying to prevent masts being erected altogether. Our aim[...] is to ensure that the masts are erected in safe places, and that they are all subject to full planning permission and therefore public consultation. Most people are not opposed to mobile phones as it is through choice that people use them."[16] Similarly, Friends of the Earth Scotland, who campaign on this issue, state that, "Friends of the Earth are not against masts. We simply wish them to be sensitively sited and with full consultation with communities."[17]

"dialogue would reap dividends"

It is clear that without a greater, more co-ordinated approach to public involvement, BT and other phone companies would continue to face spirited resistance to their plans, particularly the new masts needed for the 3G network. This could result in considerable damage to companies' reputations, and an erosion of trust, particularly for BT with its long-established, trusted brand.

The work that BT is doing through the 'Ten Commitments', to find ways to involve local communities more fully in decision-making, could be an important step in building trust and defusing the tensions caused by confrontational situations. In the final section, suggestions are made for how the code could be implemented.

a precautionary approach

The precautionary principle is defined in the 1992 Rio Declaration on Environment and Development as, "Where there are threats of serious irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation,"[18] The precautionary principle or 'a precautionary approach' is enshrined in much environment and health policy and law at a UK, European and international level. Most recently, the European Commission's Communication on the Precautionary Principle, published in February 2000,[19] attempts to codify the essential elements of precaution in EU policy and to set a predictable framework for its application. For the UK Government, the Inter-Departmental Liaison Group on Risk Assessment (ILGRA) will shortly publish guidelines for the application of the principle in UK government departments. In the context of the debate around mobile phones, the Stewart Report suggested a "precautionary approach" to policy-making because of the "gaps in knowledge."

Although the terms 'precautionary principle' and 'a precautionary approach,' are both used widely and often interchangeably, this report refers to "a precautionary approach" because of the current lack of a detailed definition of 'the precautionary principle' which can guide policy and action. There is still considerable debate about what 'a precautionary approach' means in practical policy terms. Without clear definitions, there is a danger that is will be invoked in an unpredictable or discriminatory way. To overcome this, it is essential that those bodies claiming to take a precautionary approach – whether companies, NGOs or government departments – state clearly what they mean, and act according to this understanding.

Green Alliance's work in this area shows consensus on a number of points. A precautionary approach means making decisions based on the available scientific evidence, rather than waiting for reasonable certainty – it means thinking in terms of 'balance of evidence' rather than waiting until one can prove 'beyond reasonable doubt'. It means considering not just what scientific evidence is available, but what gaps there are in scientific knowledge, and what we simply don't know. It means putting scientific evidence in context by including other forms of knowledge, such as the views of stakeholders and the wider public. Lastly, it means being open and transparent about assumptions made, and about the reasons for decisions taken. A precautionary approach always implies judgement – it is not an automatic or objective process – but this judgement should be informed and deliberative, not arbitrary.[20]

"precautionary approach means making decisions based on the available scientific evidence"

In summary, a company should

- Have a clear, agreed understanding of what 'a precautionary approach' is, in the context of its particular business, and share this understanding with stakeholders.
- Be clear about the uses of, and limits to, scientific evidence (this is discussed more fully in the next section).
- Include not just scientific information, but other forms of knowledge, such as the views of stakeholders.
- Be prepared to alter their policy, following a precautionary approach, as new evidence or uncertainties come to light.

BT's stance on precaution

The Stewart Report stressed the need for a precautionary approach, in view of the public concern around potential health risks of mobile phones, and the lack of scientific certainty. BT supports both the report as a whole, and the 'precautionary approach' that the report suggests. In a recent document, the company states that "the Stewart Report proposed... that 'a precautionary approach be adopted until more robust scientific information becomes available...' we will play our part in developing and actioning recommendations based on a precautionary approach." Particular precautionary action recommended by Stewart, and supported by BT, involves not encouraging the use of mobile phones to children under sixteen, in case of health risks, and adopting more stringent international standards set by the International Committee on Non-Ionising Radiation Protection (ICNIRP) rather than the less demanding national standards set by the National Radiological Protection Board (NRPB).[21]

Despite their support for the precautionary approach taken by Stewart and its broadly precautionary stance on the issue of mobile phones, BT has no generally agreed conception of what it means for the company. Different individuals within the company have differing views on its meaning and application. One representative pointed to the amount BT spends on funding research into potential health problems, saying that this highlighted a precautionary approach, as they were seeking to fill gaps in knowledge. Another said that a precautionary approach meant constantly reassessing available evidence, and to keep looking forward, to be prepared for potential adverse consequences.

The lack of a commonly agreed definition within BT is not surprising. The Stewart Report itself does not attempt to define precaution in a rigorous way, but simply offers a discussion of its legal status, its use so far and its implications for mobile phones. Few companies, either, have clear definitions or guidelines as yet. Such guidelines would, however, help to apply a precautionary approach consistently across the company. This is discussed in the final section.

BT's willingness to support the Stewart Report's precautionary approach, its support for further research, its general honesty about gaps in the knowledge, and its commitment to openness and transparency all suggest a precautionary approach to policy-making. Making this stance explicit would be a very good starting point for the guidelines.

the role of scientific evidence

Issues of scientific uncertainty inevitably lead to consideration of the role that science should play in decision-making. In particular, there is a need to examine how scientific evidence should be used, and what should be done when there is a lack of evidence. Research, and past experience, has shown that misuse of scientific evidence, without proper examination of the assumptions behind the evidence, is extremely problematic.[22] This was shown clearly, for example, in the case of BSE. All too easily, conditional, contingent scientific conclusions become assertions of 'fact' creating a false sense of certainty that may later be overturned. This creates crises in confidence, when what has been asserted as 'the truth' turns out to be a conditional finding after all. It is also damaging to industry, as the ability to predict policies or to develop stable regulatory environments is severely curtailed.

"Issues of scientific uncertainty inevitably lead to consideration of the role that science should play in decision-making"

It is clear, then, that scientific evidence should be handled carefully and openly. It is essential to be honest about gaps in scientific knowledge. The science should be as impartial and consensual as possible, which in practice may mean providing greater support for non-industry scientists. It is also necessary to acknowledge that science is by its very nature partial and incomplete, and must be put in its social and political context. Science provides evidence, but it cannot make decisions. Other types of knowledge, such as the views and experiences of individuals, need to be included in the process. There has been a great deal of emphasis on encouraging public understanding of science, but it is essential, too, for scientists to understand and involve the public, in a two-way debate.[23] As Winston Churchill said, 'science should be on tap, not on top.'

In summary, a company should:

- Be honest about the limits of available scientific evidence, and about the gaps in scientific knowledge.
- Support further scientific research, not just by industry scientists but more widely, with the remit for this research decided by all stakeholders, not just the industry concerned.
- Accept that scientific evidence is only one form of knowledge, and that other views and experiences should be heard.

BT's approach to scientific evidence

BT plays a role in scientific research into mobile phone use, both within the company, within the UK industry, and at an international level, through the World Health Organisation (WHO) network. BT's Chief Medical Officer is responsible for investigating potential health effects of mobile phone use. He explains, "my role is to provide advice to the industry. It is important to be straightforward and honest about gaps in the knowledge." Whereas, he says, the mobile phone industry tends to have an inbuilt faith in the technology, he tries to make sure that people are aware that "you can't be completely sure. I always express doubts and bring it back to what the real science says."

BT, as part of an industry group, is funding research into potential health effects of mobile phones. It is providing its share of £7.68 million, to be channelled through the Stewart Committee, which will determine the scope of the work and commission the research. Channelling money through an independent body, rather than commissioning work or employing scientists directly, is important, as it results in research with a greater degree of independence and, therefore, credibility. As BT says, "we support the need for continuing, relevant and high-quality research... to ensure this issue is subject to the most up-to-date and rigorous scientific scrutiny."[24]

Most BT employees interviewed understood the need to be honest about the gaps in the knowledge, and were careful to avoid saying "there's no risk" or "mobile phones are safe". Instead, a typical response was "we can't ever prove that there's no risk. All we can do is explain, and reiterate the fact that there's no scientific evidence that phones are dangerous to health". However, whilst the Chief Medical Officer makes it clear that there were significant gaps in the knowledge, in other parts of the company, there is a tendency to downplay the uncertainties, and to focus on the "lack of evidence" of any harm. It is, of course, important to reassure where the facts are available to do so, but BT's public position should not overstate safety. Doing so could backfire if new evidence of harm emerges.

There is also a tendency within BT, and the industry more generally, to privilege scientific information, and give it too great a prominence. For example, in its response to the Stewart Report, BT writes "we recognise that public concern is not purely related to scientific fact but arises also from emotive elements which may impact on well-being". This sentence makes clear that BT do not rely purely on science, and are willing to take other views and values into account. However, the language used, and in particular, the contrast of 'scientific fact' with 'emotive elements', implies a dichotomy between science and other views, and tends to privilege the scientific perspective, which is not helpful.

BT must also engage in an open dialogue with its employees on these issues. The potential health risks of handsets are more of an issue for employees, some of whom are heavy mobile phone users. This is handled by BT's Occupational Health team, and the company currently has a special monitoring system for cases where mobile phones are alleged to be a cause of symptoms.

conclusions and recommendations

The mobile telecommunications industry is relatively new, and is expanding rapidly. It already provides both economic and social benefits, and with the growth of mobile access to the internet, its importance will increase significantly. In this context, it is crucial to handle the scientific uncertainty that currently surrounds the technology in a careful and responsible way. BT, along with other industry players, has been thinking through and acting on these issues, through their engagement with the Stewart Report and through their work with policy-makers and local communities. In this section, an assessment is made of BT's approach to date. Suggestions and recommendations are also offered for how BT could build on its current approach in the future. Although in the context of this report these recommendations are put to BT, they have wider relevance across industry and government.

"it is crucial to handle the scientific uncertainty that currently surrounds the technology in a careful and responsible way"

involving the public

BT is currently rethinking its approach to public consultation, particularly on the issue of mast siting. In the past, as described above, it has tended to proceed with the mast, and wait for objections to be made. If it is to retain public confidence, and proceed with its 3G development plans without creating considerable opposition, it will need to focus on engaging with the public, and particularly local communities near mast sites, in a meaningful and systematic way.

There is a role for both industry-wide collaborative work on these matters, as well as direct action by the individual operating companies. The 'Ten Commitments' are a good example where the industry has agreed some high level principles, but it will be up to individual companies to deliver against these.

The first of these Ten Commitments is to, "develop, with other stakeholders, clear standards and procedures to deliver significantly improved consultation with local communities." This is a welcome step forward.

In terms of public participation, the detailed implementation of the Ten Commitments by BT should include:

- **public involvement at an early stage**

As described above, at present, public involvement in mast siting tends to be confrontational, because the company involved proposes a mast in a certain place, and the community objects. There could be a role for involvement earlier in the decision-making process, so that these decisions are seen as being made jointly between the community and the company. This could work as follows. BT would announce that, in order to ensure good quality coverage and meet license obligations, they need a certain number of masts in a given area. Representatives from the local community would then work with BT, through a consultative process, to decide which particular sites within the area should be used. This would move from a conflictual 'support or object' approach to one in which decisions were genuinely shared.

- **use of participatory techniques**

In order to involve communities, in particular in sensitive cases where there is potential for conflict, BT could consider the use of participatory techniques, such as a citizens' panel, deliberative poll or consensus conference, run by independent facilitators. These would act as alternatives to traditional approaches to consultation, such as a public meeting or written submissions. Internet-based discussion fora would be a possibility too. BT could consult with social scientists who study issues of public engagement on risk issues, and organisations specialising in participatory processes, about ways forward. A recent report for the Parliamentary Office of Science and Technology, *Open Channels*, gives further details of these processes.[25] Both financial and time constraints would preclude a detailed participation exercise for each mast site. Such techniques could be useful, though, in sensitive cases, where there is potential for conflict.

- **the national debate**

BT could, as part of the FEI, stimulate a wider debate on the future of mobile telecommunications, at a national rather than local level. This could take the form of a consensus conference, for example, using a representative sample of the public. This would put the mobile phone health issue in the wider context of the benefits and risks of mobile telecommunications more generally. It would allow public debate on the future of the industry, and would be a useful 'gauge' of public views.

a precautionary approach

As shown above, BT's handling of the mobile phone issue is broadly 'precautionary'. It is clear about the uses of, and limits to, scientific evidence, and it consults with stakeholders and others concerned. It is actively involved in funding research aimed at widening knowledge. However, across the company, there are different levels of understanding, and differing views of

what 'a precautionary approach' means for BT's activities. This is not surprising – few companies or organisations so far have an agreed policy on this area. BT could consider a more formal company commitment to 'a precautionary approach,' and ensure that all those playing a role in the mobile phone health debate understand and apply this approach. This would allow the company to make a virtue of its precautionary approach. Making a formal commitment would bring about greater predictability across the company, and ensure greater transparency and accountability for stakeholders. Suggestions for drawing up this common approach are:

- **a clear commitment to the precautionary approach**

BT's commitment to the precautionary approach could be based on their Statement of Business Practice, which sets out BT's general business philosophy. The Wireless Steering group and Social Team could work together to draw up a company-wide position, or guidelines, on the precautionary approach. This position could make the following points clear:

- Why BT is committed to a precautionary approach, where necessary.
- In what circumstances BT applies a precautionary approach.
- BT's approach to scientific evidence and scientific uncertainty, including its commitment to openness about the state of knowledge.
- What practical steps BT expects its employees to take, to ensure a precautionary approach.
- How BT works with stakeholders, and the general public, to allow involvement in decision-making.
- How BT works with others in industry, and with government.

Given its experience in this area, BT could also feed into the ongoing public policy debate about the application of the precautionary principle. This could include the European debate on the precautionary principle, following the European Commission's Communication on the subject, and debate at a UK government level, including the commitment to responsible handling of risk that forms part of the 'Modernising Government' process.

the role of scientific evidence

It is encouraging that BT acknowledges the lack of scientific certainty surrounding the potential health risks of mobile phones and phone masts, and, through its industry body, is funding further independent scientific research. However, there is not company-wide understanding of the issues surrounding the use of scientific evidence, and there is a tendency, at times, to over-state the degree of scientific certainty. Overstating the level of knowledge, and emphasising the safety of the technology, could backfire if new evidence comes to light. Being open about the state of knowledge is essential, if BT is to maintain trust with its stakeholders. These are some of the steps BT could take to ensure proper handling of scientific evidence.

- **offer clear advice on the use of scientific evidence**

BT's 'Question and Answers' pack explains how scientific evidence should be used by employees. As part of its commitment to 'a precautionary

approach', BT should continue to stress to its employees that it is essential to be honest about the lack of scientific certainty, about the gaps in the knowledge, and about the need for more research.

- **be clear about the limits of scientific evidence**

BT should make it explicit that scientific evidence is only one of the factors that it takes into account in making decisions on these issues. Other factors include the lack of scientific evidence, the views of stakeholders, and company values. This prevents the debate being seen as one of 'science' against 'emotion,' but of a range of views, all of which have their own validity and should be heard.

notes and references

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