

The results of an empirical study commissioned
by the Federal Ministry for Industry and Employment

Electrosmog in the m

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Since the mobile radio frequencies for universal mobile telecommunication systems (UMTS) have been auctioned off and the license holders have started to roll out the network infrastructure, there are considerable indications of a growing resistance to and acceptance of new mobile radio communication technology. The effects of electromagnetic fields (EMF) on human health and the possible consequences is increasingly developing more into a political issue, which is controversially discussed throughout society, by political parties, by municipalities or by public institutions.

Some municipalities have already been trying to restrict the extension of networks by referring to restrictions placed on buildings under historical preservation or municipalities are being confronted by citizens vehemently demanding that the locations of base stations be disclosed to the public. Especially regarding media coverage the possible acute and latent health risks stemming from the increasing expansion of high frequency electromagnetic waves is seen more frequently as a topic for reports in the media.

To date, research on electromagnetic compatibility concerning the environment (EMCE) has revealed that no problems have arisen from UMTS, but for more than two decades the media has very often chosen this subject to be a central theme. In the 1980s during the course of increasing technical advances in households, possible health risks from sources of low frequency emissions, such as high tension lines, electrical power lines in homes and many electrical appliances in households were given high priority by the media. At the beginning of 1990s it was then pushed out of the picture by the increasing number of reports on mobile radio communication systems. In the beginning the discussion was about the significance of electro smog caused by setting up transmitter masts for Global System for Mobile Communications (GSM, the abbreviation commonly used for D- and E-networks). Today in almost

every large municipality there is a citizens' action group concerned with this in spite of the fact that at present, Germany has a penetration rate of almost 70% and a high level of acceptance of mobile phone use.

To date, it seems as if the public's opinion on mobile radio communications has focused more on the issue of convenience, for instance, being able to be reached at all times, more mobility and an increase in personal safety. However, arguments stating that mobile phone use is associated with possible health risks have overshadowed the convenience and personal safety aspects. Nevertheless, in the meantime, with regard to local political resolutions in Munich or Berlin, it can no longer be ruled out that the EMCE debate will bring about far-reaching consequences concerning the extension of UMTS-networks and will affect the demand for mobile radio communication services.

In this context the question arises as to which direction the EMCE debate will proceed, in spite of there being legally established limit values and despite the fact that in the public debate there is a lack of general indisputable scientific causal proof. A prognosis on further progress requires a fundamental understanding of the following aspects:

- what roles the different groups of actors in EMCE discourse play,
- how they communicate,

- how the situation will change by the upgrading of GSM-networks
- and the introduction of UMTS,
- how potential risks are perceived and discussed in public,
- and how these risks in comparison to other types of risks are evaluated.

Only a heightened knowledge of the EMCE-discourse can initiate starting points which can influence this process. Within this context the Federal Ministry for Industry and Employment (BMWA) commissioned WIK-Consult in 2001 to carry out an extensive analytical empirical investigation.¹

The first step in this study was to do a fundamental theoretical investigation of the significance of technology induced risk discourse. The second step involved the investigation of how the EMCE problem is dealt with in print and in audiovisual media (AV media). The media analysis was based on circa 1,200 articles relevant to the subject, these articles were taken from press data banks. The Forschungsgemeinschaft Funk's (FGF) extensive documentation of articles on the topic was also used; the FGF has been regularly evaluating media coverage since 1995.

The third step was concerned with risk perception and its evaluation by the public. This was investigated with a representative survey in cooperation with Ipsos Germany; an institution which conducts

opinion surveys throughout the public. The results were validated in numerous extensive interviews by laypersons.

The fourth step involved an analytic comparison of the corresponding discourse process in the following countries: Austria, Switzerland, Great Britain and Italy. For the final prognoses experts from different fields were interviewed. Based on these interviews, future development prospects were worked out by means of a scenario technique.

1. The EMCE-Risk Discourse

Modern risk communication research offers an important approach to understanding social communication and its process concerning risks posed by technology, such as those discussed in the EMCE debate. If the sociologist Ulrich Beck's analysis is correct, which states that dealing with incomplete information concerning modern technology is a structural characteristic of today's society and that technical problems are in essence social risks, whose evaluation, acceptability and regulation are the result of negotiation processes then communication processes regarding all significant technology and its potential risks are unavoidable. This is especially true for system innovations such as mobile communication systems, which have an effect on all areas of work, and leisure and have changed our communication habits completely.

Some of the peculiarities of this debate are that the risks are first constituted through political discourse. Risks in a social context are only significant to the extent in which they are perceived, evaluated and communicated. Objectively, in most cases this happens almost independently of its explosive nature, of how extensive it is or of the factuality of a technically caused risk. A formula originating in the insurance industry is determined according to the risk of a technology (R), according to the possible extent of the damage (D) and according to the probability (P) of the damage occurring, ($R = P \times D$). This formula has really no practical relevance at all for public risk discourse. The debate in Germany and France on the risks posed by nuclear energy took different courses and had different results. This elucidates the fact that comparable technology and risks can be perceived and assessed completely differently. They point out that the process of this discourse is principally open and therefore suggestible and can lead to totally different results.

In this context controversial debates between various actors and social groups should not be regarded at all as an interference factor and seen as unnecessary public vexation, delays and high costs. They must much more be understood as a meaningful contestation concerning the determination and the layout of social embedding and the behavioural use of a new technology. Hence, a society's relationship to the environment and its attitude towards health, different cultural values inherent in a society, and its regional or national characteristics, the basic standpoint a nation has towards innovations as well as the subjective and collective evaluation of the use and risks all play a central role.

However, discourse about risks should not have too many positive expectations that conflicts and conflicting interests can be totally resolved in the end. This seems difficult because conflicts are invariably

normatively charged and one must proceed from the assumption that a pluralistic society will have divergent value concepts. Regarding risk communication many more attempts should be made, even with insurmountable dissent and conflicting interests, to reach socially compatible and if possible versatile and acceptable compromise solutions.

All risk discourse can be described as constituting a political arena, where social groups, and actors such as associations, standardization institutions, public administrations, industrial corporations, courts of law or political institutions enter into negotiating processes. Presently, the media, local citizens' action groups, the law as well as the network operators have the greatest influence in the EMCE arena, whereas, numerous other actors, e.g. political parties or medical associations are gradually beginning to get involved. In this respect, we can assume that when more actors enter the arena the conflict will intensify rather than move towards a settlement.

As a rule, value limits and the stipulation of these value limits set the stage where acceptance or unreasonable demands concerning collective risks are fought over. The more the public responds and the more intense the debate becomes, the greater the probably is that a dissent or a conflict will lead to a political solution and consequently, the management of risks will have be organized. Concrete results, such as the publication of new scientific findings, reports on health risks, protests, court cases, (e.g. the law suit filed for billions against Motorola) and their proliferation by the media can bring the debate to a critical head. Inversely, measures such as agreements being made between municipalities and network operators (issues dealing with location) by means of more transparent information, could to a great extent, contribute to easing the situation, since this would give a considerable signal to the public that their concerns about risk prevention will be paid attention to.

2. The presentation of the EMCE-problem in the German media

For public perception and the communication of risks caused by technology, the media has a central function to act as a coordinator and reinforcer. Scientific investigations of media coverage have pointed out, on the one hand that mass media is seldom biased when reporting on controversial issues having to do with technology. On the other hand, media competition for coverage and the goal of reaching as many people as possible often causes journalists in their articles to play the role of advocate for their readers and to dramatize certain subjects. Whether or not an accident is perceived as positive or negative depends on how it is reported on, it is seen as positive when the words “number of probable survivors” is used and the report is perceived as negative when the words “the number of expected deaths” are used. The choice of words can, therefore, have an enduring effect on the public’s perception of risks and their evaluation of risks. In this context, the general significance of the media’s presentation and life-cycle of a risk issue poses the question of the media’s role in the EMCE debate.

2.1 The frequency of EMCE articles appearing in the media

At the beginning of the 1990s the EMCE problem was only sporadically mentioned in the media. Less intense periods were replaced by periods when the subject was more intensively reported on as a central theme. The situation fundamentally changed when the GSM-900 network was set up. Nationwide in 1994 there were already more than one thousand newspaper articles reporting on the potential risks posed by mobile radio communication systems. The following year 1995, there were more than 3,000 articles published, circa 280 per month. In the following years the number of reports remain constant, but later in July 2000 the number of articles

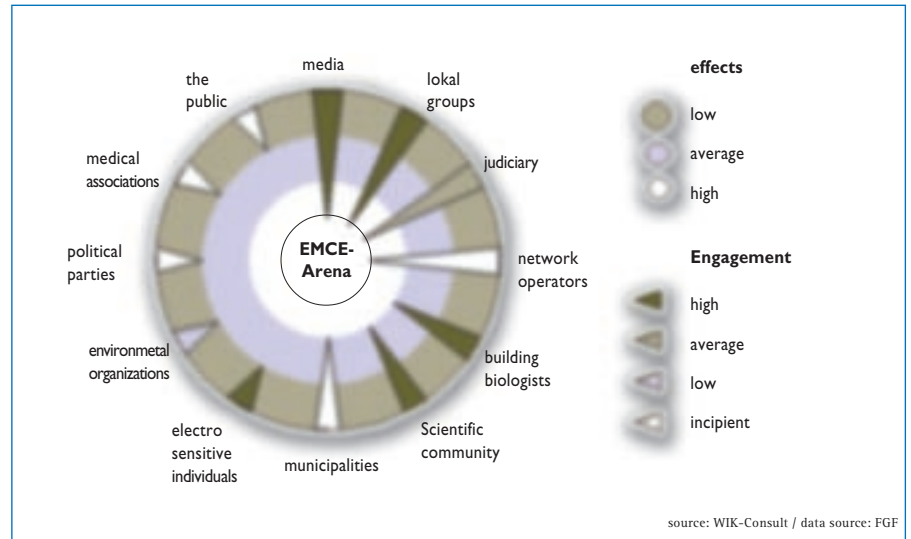


Diagram 1: actors' rolls in the EMCE-arena

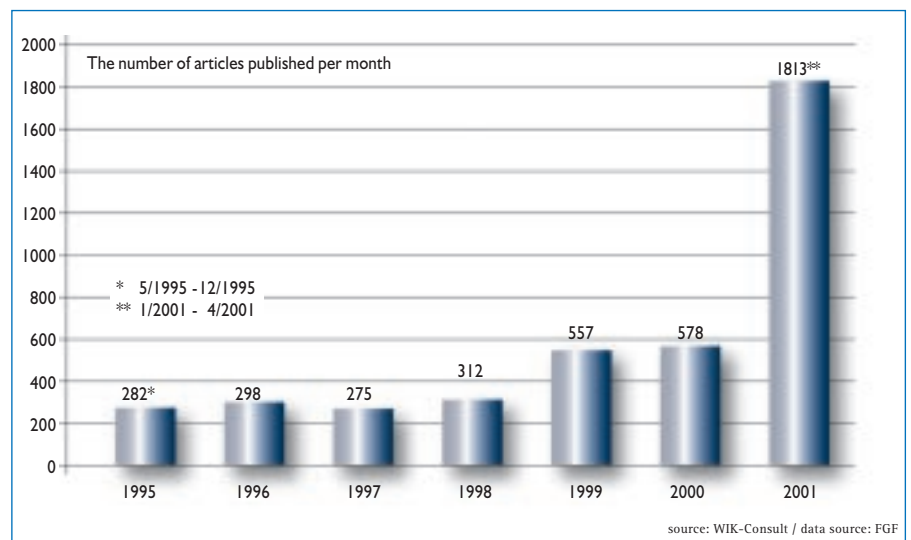


Diagram 2: the frequency rate of EMCE-problem presented as a central topic in print and AV media

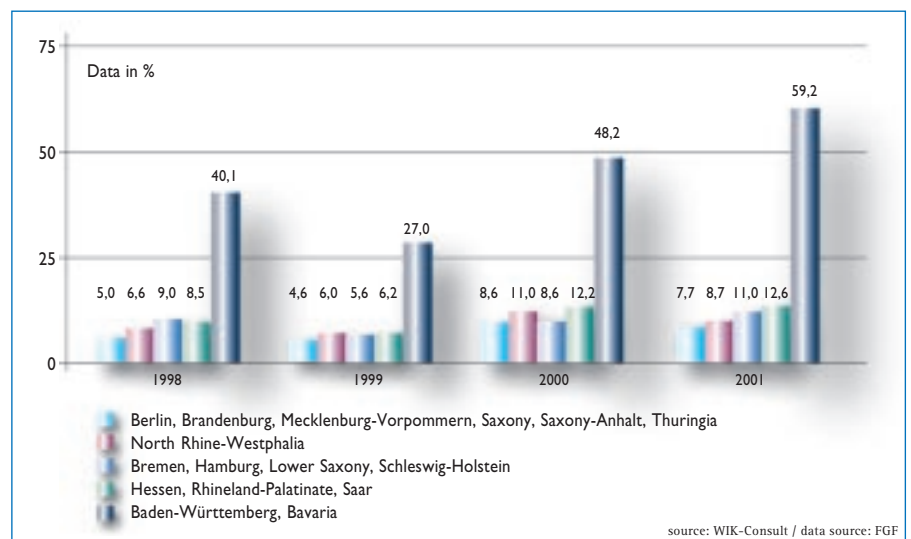


Diagram 3: Regional distribution of media coverage

skyrocketed due to the media's response to the increase in UMTS-frequencies. The number of reports tripled until 2001, when there were over 1,800 press clippings per month. In 2002 the number was more than 2,500.

2.2 The distribution of articles according to the type of coverage in the media

The EMCE-problem is, in particular, a subject for the daily press, these articles very frequently appear in the local news sections of newspapers. Usually, the information found in this section of a newspaper refers to current events, which usually receive a lot of attention in the media, such as court rulings, the founding of a new citizens' action group or the release of the results of a new study. Weeklies or periodicals that appear every two weeks and have the possibility to thoroughly present all the relevant background information give the EMCE problem very little priority as a topic of interest as opposed to daily newspapers.

2.3 Regional Distribution

If one has a look at the distribution of the articles in the media with regard to the federal states, there is a clear south-north inclination. Especially for the years 1998 - 2001, a noticeable asymmetry is exhibited. More than half of all the articles (59.2%) can be allotted - with an increasing tendency - to the federal states in the south, Baden-Württemberg and Bavaria. All of the other states were recorded as having a consistently low level of media coverage. In 2001 8.7% of all of the articles published on the EMCE debate appeared in North-Rhine Westphalia, for the federal states, Bremen, Hamburg, Lower Saxony and Schleswig-Holstein the percentage was 11%. For Hesse, Rhineland-Palatinate, and the Saar the corresponding percentage was 12.6%. The EMCE played only a marginal role in the media in the eastern states.

2.4 Referring to the field source

For the most part equipment for the infrastructure and terminal equipment was referred to as causing biophysical effects. The majority of the reports stated that radio masts (75%) and mobile phones (43%) were the major source of emissions. When radio and television technology is included (4%) in the statistics then reports on high frequency technology dominate this type of media coverage, whereas low frequency sources such as high-voltage power lines were almost ignored in the media. Altogether the number of reports on radio masts and mobile phones both increased continually since 1996, however there were less reports on mobile phones than masts.

2.5 Coverage referring to the biophysical effects of HF

Since the mid 1990s the causes or the promotion of cancer and effects to the head (the brain) have frequently been a topic chosen to report on. The number of reports on cancer and the weakening effects on the immune system have been relatively constant. Effects to the heart, hormonal problems, or deformities, in contrast are problem areas which are not reported on very often. Surprising is that reports on adverse effects on people's well-being has taken on much more relevance in public discussions during the last few years. Functional complaints such as headaches, sleeping problems, nervousness and symptoms of stress are mentioned more often as well in the last few years. Thus a mobilization effect of this media coverage cannot be ruled out, because the number of people potentially affected by this could increase considerably.

2.6 Legal aspects

Since 1998 a clear increase has been established in the media's interest in covering the legal aspects of the EMCE-problem. The EMCE -legally drawn framework

(such as, 26.BImSchV) as well as lawsuits and proceedings pending in court, have all been since 1998 the subject of media reports. These facts are reported on so often in the media that citizens along a wide front are fighting legally against the setting up of mobile radio infrastructures. On the whole, one has the impression that the conflict has increased on a broader scale. Approx. 22% of all media reports in 2002 dealt with the legal aspects of the EMCE problem.

2.7 Tendencies in media coverage

Since the FGF started to document media coverage in 1995, it has been determined that the tendency to report on the EMCE debate fluctuates widely. During the mid 1990s a large part of the reports maintained a neutral weighing up of the risks and opportunities involved with mobile radio communications (articles were written in question format: "Will using a mobile phone make you ill?"). However, nowadays when articles are neutral or rather the coverage tends to be positive emphasizing usage, it is almost always an exception (less than 10% of all articles). In contrast, what was noticeably high was the percentage of reports where various health and other risks were emphasized as well as focusing on the deficit in dealing with the EMCE-problem by the network operators and by the municipalities or other public institutions, such as state parliaments or the federal government. This kind of reporting has tended to increase since 1999.

2.8 Argumentative Stereotypes

For years media coverage on EMCE problems has been consistent in characterizing the content of the presentation and the roll of the various actors.

Upon close inspection the critical or rather the negative reports can be sub-divided into the following argumentative stereotypes.

Information and Explanations

- “Network operators do not inform municipalities at all about the planned locations for base stations or they inform them shortly before they set up the base station.”
- “The information that the network operators provide does not exactly inspire confidence in mobile radio communication systems because they do not answer or only inadequately answer the questions that concerned citizens ask.”

Knowledge Aspect

- “The mobile radio infrastructure is being expanded further even though the potential health hazards have not been thoroughly researched.”
- “It is doubtful, if questions concerning electromagnetic effects will ever be objectively answered with verifiable answers.”

Precautionary Aspects

- “The existing value limits, in view of the large infrastructure density in Germany, are generally too high.”
- “The value limits relate only to the thermal effects and the athermal effects which could occur below these value limits are not even considered.”

Democracy and Legitimation Aspects

- “The financial interests of the industry prevent any kind of preventative health protection. In order to protect their own commercial interests the network operators are trying to greatly influence the public and politics.”
- “There is a lack of fairness on the side of the mobile radio communications industry when dealing with the interests of the public.”

Enforcement Aspects

- “Not all transmitting installations comply with the value limits.”

If network operators and public institutions want to have successful risk communication, it is imperative that they deal intensively with these argumentative stereotypes.

3. Risk perception and the public’s evaluation

Fundamentally the survey was based on a representative demographic variable according to sex, age, education, income etc. Information was obtained through telephone interviews (CATI), 1000 people were interviewed. 14-17 year olds were included

in the survey but they were asked questions which were different from what the other interviewees were asked. In different sets of questions the interviewees were asked to give a general assessment on mobile phone use, they were also asked about the latest information on the subject, about an evaluation concerning risks related to mobile radio communication, about possible precautionary measures and providing information. Since the survey itself was so broad the results can only be presented in a condensed outline form.

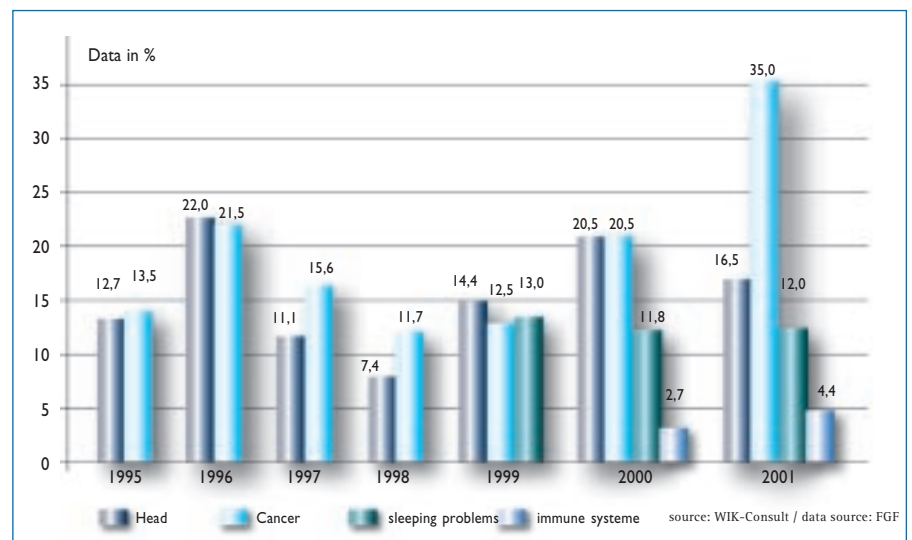


Diagram 4. How often potential health risks were mentioned in % with regard to all media reports (I)²

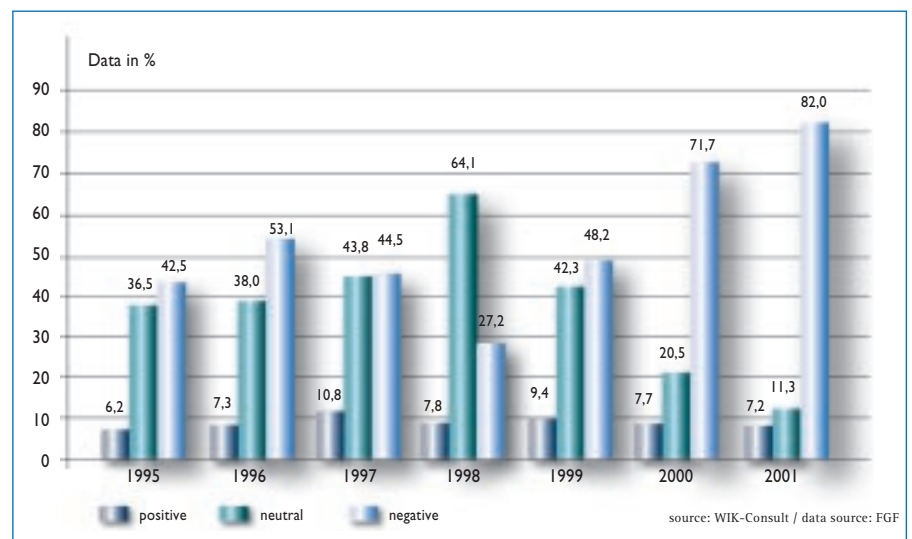


Diagram 5. Tendencies in media coverage

3.1 The use of mobile phones in Germany in 2001

• Within Europe, Germany has a leading market share of 20% for mobile phones. The high penetration rate of more than 67% and the fact that more than 55 million phones are connected to mobile networks indicate that there is an extremely high level of acceptance of mobile telephones.

• A saturation of the mobile radio communications market seems to have finally been reached. The enormous growth rate of the last few years is clearly declining.

• The percentage of people who do not have a mobile phone has stabilized. About 90% of non-users do not plan to get a mobile phone one day. These people are primarily the elderly, people without children and people with low incomes. Circa 4% plan to sign a contract in the near future.

• A high percentage 46% can be considered to be those who do not use a mobile phone very often. This segment uses a mobile phone only a few times or even less per week. 54% are people who use a mobile phone very often. They use it many times a day.

• Mobile phones are used most of all in households with children. They are very helpful for maintaining the necessary daily communication and they provide families with a feeling of being psychologically close. Fears relating to EMCE-emissions alleged to be especially harmful for children and adolescents did not influence people's decision to get a mobile phone.

• The mobile phone has transformed itself from a luxury item into a commonplace device, which is obviously used at all times for many different purposes. It is also being used more and more as a substitute for the fixed network, which alternatively would be completely free of risks provided that no DECT-based (digital enhanced cordless telecommunications) cordless phones are used.

• Mobile phones have undeniable ad-

vantages. More than three-quarters of those interviewed said that a mobile phone gave them a feeling of security, just about three-quarters concluded that they are more mobile and flexible with a mobile phone and two-thirds said that a mobile phone made the organization of their daily lives easier.

• Mobile phones are used mostly for personal use; this stresses the aspect of spontaneity. The percentage of those who possibly had to use a mobile phone for professional reasons is minuscule, especially for women.

• The public regard mobile radio communication positively as an economic factor. Approximately two-thirds believe that mobile phones create jobs.

3.2 General information – knowledge and self-assessment

The second set of survey questions dealt with general information about the potential risks posed by mobile phone use. What was especially relevant in this context was in what way can fears be traced back to subjective assessments and what was based on objective knowledge. What had to be taken into account was whether or not the person being interviewed lives near a base station.

• Approximately one-third of those interviewed were not aware of a radio mast in the area where they lived. One-third could not answer the question. A majority of the population showed little interest in the question pertaining to location.

• More than one half of those interviewed said that the physical sight of a radio tower did not disturb them. Especially, men, frequent users and younger users of mobile phones were not critical when it came to giving their opinions on the aesthetics of having mobile radio masts blighting the landscape and rooftops.

• About 90% of the population had already heard of the possible health risks involved with mobile radio communica-

tion systems. However, most of them felt that they were not well-informed on the subject. Many people had already heard of important terms relevant to the EMCE-debate, but they could hardly associate them with anything concrete.

• Young men, frequent users and those interviewed with a high income were considered to be the most informed on the subject. Women and the elderly were the least informed.

• An important source of information for 95% of the interviewees was the media, almost one-third obtained their information from their peer-groups (friends or acquaintances). For 13% interviewed environmental organizations played an important role as a provider of information. Remarkably, very little attention was paid to information provided by public institutions (5.4%) and especially information from the network operators (4.6%).

3.3 The public's perception and assessment of potential risks posed by EMCE

A third set of questions dealt with the public's assessment and perception of EMF posed by mobile radio communication systems. At this point in the survey the interviewees were asked to compare the actual or potential risks of various technologies. They were also asked if they knew anything about EMF with regard to some electro-technical devices such as PC-screen, a microwave oven, or a mobile phone, in order to estimate just how well informed they were on the subject. Then they were asked to estimate which health risks are connected to mobile radio communication systems. Finally, in order to get an idea of who is directly or indirectly affected they were asked about their own experiences, or experiences friends or acquaintances had regarding health problems in conjunction with mobile radio communication systems.

• When the possible health risks posed by mobile radio communications are com-

pared to other technologies, they were basically estimated to be less harmful. However, only one-fifth of the population believe that there are no risks at all.

- Those who regard mobile radio communication systems harmful also rated the risks of other technologies to be high. High risk assessment and high acceptance- combined with intensive use- cannot be ruled out with regard to mobile radio communications. This indicates that perhaps a pragmatic relationship has developed regarding contact with a potential residual risk.

- More than one-half of the population is convinced that the risks posed by mobile communications will increase in the future. One-fourth believes that exposure to EMF-risks will remain the same.

- The high level of insecurity which has developed from this situation is the expression of a great need for information dealing with future developments. ("What will happen next?")

- The public's knowledge on the EMF-phenomena, especially concerning household appliances, is extremely limited, and as a rule it has nothing to do with the actual facts.

- Two-thirds of those interviewed stated that the primary source of health risks came from mobile phones and not from transmitting masts. This is a clear contradiction as to what is reported on by the media.

- When mobile phones are rated - when at all - they predominate completely as a potential risk because they are held close to the body.

- Mobile radio masts are rated as a high risk because of the intensity of their "radiation". How close the transmitting mast was to a place of residence played a very small role in the risk potential assessment.

- In spite of the public's insecurity, the number of people who believe that they have already had experience with health problems caused by mobile radio communication systems or have heard about

someone who has in their peer groups, is very low. If there were any problems at all they were functional disturbances or feeling out of sorts. Due to the low number of cases who claimed to have had such a personal experience, a statistical conclusion cannot be drawn.

3.4 Precautionary measures, evaluating the uses and the risks

A complete absence of risks has to be regarded as a typical ideal situation, which cannot exist in a hi-tech world. Public controversies about risks posed by technology evolve around evaluating the uses on one side and the acceptance of the risks on the other side. In this context a set of questions was used to find out how prepared people are, who regard mobile radio communication systems as harmful, to take precautionary measures. With this in mind they were first asked how willing they were to personally take precautions and if they were willing to protect their interests by becoming involved in a citizens' action group. The second question asked them about the conditions and their acceptance of general precautionary measures. Since questions concerning the necessity of precautionary measures are generally answered positively by the public, they were also asked if they were prepared to pay for the reduction of potential health risks.

- More than two-thirds of those interviewed said that they would personally take precautionary measures. Time limits for phone calls was the most popular measure, since it also includes the incentive to keep the cost of phoning down. Older people as opposed to younger people, are more willing to personally take precautionary measures.

- Uncertainty about possible mobile communication risks leads to restrictive telephone behaviour and this results in lower air-time.

- Those interviewed who said they personally took no precautionary measures,

as a rule they did not take any precautions because they felt they were not at risk and they did not want to restrict their mobile phone use.

- The willingness to become involved in citizens' action groups fighting to stop the erection of mobile radio masts is relatively high. Approximately 15% of the population would become involved, or perhaps take part in a citizens' action initiative or they are already actively involved. Women with children under 13 showed the most willingness to become active.

- Two-thirds of those interviewed who had already heard of a citizens' action group regard their activities as meaningful. Even though very few of them are involved themselves, the activities of these groups are silently supported. More frequently than average, older persons with a high level of education regarded the work of citizens' action groups fighting against mobile radio masts as meaningful.

- More research on health risks as well as a compulsory declaration for mobile phones are the most popular precautionary measures.

- More than 80% of those interviewed think that a reduction in value limits makes sense. Circa 45% also find this meaningful even when a reduction in value limits means more mobile radio transmitting masts would have to be erected. About two-thirds are in favour of a decrease in value limits even if it entails higher fees and charges when using a mobile phone. Therefore, the ongoing debate about limit values will remain a central focal point for all of the actors in the EMCE-arena.

- Just about one-third of the interviewees were prepared to pay an additional Euro 2.50 per month, if the money would be used for precautionary measures. A little more than one-fourth of the interviewees would be willing to pay Euro 5.00 per month, one-sixth would be prepared to pay Euro 10.00 per month and almost 10%

would be willing to pay Euro 15.00 or more per month. This willingness to pay indicates that for many people precautionary measures are a serious concern.

3.5 Improving the information status on EMCE

The fifth set of questions dealt with the aspect of improving information. The public's need for information concerning EMCE, despite intensive media coverage, is estimated to be very high. Most people are aware of the discussion taking place in the media on the possible health effects posed by mobile radio communication systems, but they expect more information. Obviously media reporting is highly regarded. Therefore, it can be reckoned that in the future reports in the mass media will receive a lot of attention.

- More than 80% of the interviewees asked for more information on the possible health risks posed by mobile radio communications systems. Especially young people (up to 29) felt the need for more information. Obviously, the public's insecurity with regard to this subject runs deep.

- This also indicates a need for more information regarding possible preventative measures. More than two-thirds of those interviewed would like to be better informed regarding this.

- Circa two-thirds of the interviewees expect more data and facts from the mobile radio communication providers. People have very high expectations concerning experts working in the industry and concerning the level of involvement from those responsible. Just about three-fourths of the interviewees demanded more involvement from the mobile radio communication providers in dealing with possible risks and precautionary measures. Especially the young people who were questioned made this request.

- The opinion of older people and people with children was that authorities and official offices should be able to inten-

sively provide information. Within this group, they are trusted the most.

- On the other hand, more than half of the older people questioned expect a high level of involvement from the authorities and official offices when dealing with possible risks and precautionary measures.

- Altogether from the perspective of those questioned, they want to receive more advice from environmental organizations. Apparently these groups are associated with being very active and being strongly committed to certain interests.

3.6 General Assessment of the debate on risks posed by mobile radio communication systems in Germany

The discussion regarding possible health risks posed by mobile radio communication systems in the media has apparently reached a climax. The majority of the public is concerned and would like to be better informed. Therefore, it was interesting to determine if the EMCE-risk debate in its totality is perceived as necessary or superfluous and what value does the public generally place on dealing with the risks and opportunities involved in new technology. With regard to a general assessment of the current risk debate, all of those questioned were confronted with 11 theses. The following results were concluded:

- Precautionary measures for children were met with much approval. Households with children are more aware of costs and therefore they were not as willing to pay for a reduction of potential risks.

- The majority proceeds from the assumption that despite the EMCE debate the number of people using a mobile phone will not change. Hardly anyone seemed to be willing to give up using a mobile phone altogether.

- The desire for more research and information emphasises the widespread doubt with regard to the extent and the relevance of mobile radio communication

systems regarding possible health risks.

- There is a marked willingness with the public to engage in discourse evaluating the risks and chances. 80% of the population agreed with this statement: "If you want to telephone with a mobile phone, you have to accept the antennas."

- A large share of the population is willing to put up with extra costs when it comes to precautionary measures. The high level of willingness to pay more indicates that precautionary measures have a high value status with the public.

- The thesis that inherent risks are involved with mobile phones, is correct in the opinion of two-thirds of those questioned: in an analogy to motor traffic those questioned expected the debate on the risks posed by mobile radio communication systems will be as intense as the debates which took place earlier on major projects dealing with roads and traffic.

- On the whole, the level of uncertainty among the population is high. Therefore, only a few believe that the discussion on the possible risks posed by mobile radio communication systems is superfluous. The actors - especially the mobile radio communication companies and the authorities - have to prepare themselves for an intensive discourse and understand that a debate is a normal and necessary social process with regard to the embedding and the use of modern technology.

- Online-emissions data banks, which create transparency concerning the actual rate of EMF-emissions are regarded as meaningful in order to have indirect control over the compliance regulations of the limit values. An important aspect for those questioned was that the information should be available to anyone who is interested and not just the municipalities.

- A reduction of value limits was assessed by many as an admission that risks actually exist. Therefore, precautionary measures for sensible zones were largely rejected. An either-or-attitude prevails. Ei-

ther protect all of us, because the actual risks have been proven to exist or there exists no need for any further precautionary measures.

- Self-regulating measures from the side of the providers, received positive resonance when the opinion of those questioned was asked. They were regarded as sound and reliable because of competition among companies they would be forced to comply to regulations.

- The term SAR-values (Specific Absorption Rate) is practically unknown. If the specific absorption rate is used as the characteristic quantity used for a stamp of quality than more explanations are necessary from the side of the providers and manufactures.

- Altogether, mobile phone users need a lot more information on EMCE and the demand for neutral and objective information is high. Generally, in this context laypersons expect public institutions to be highly involved since they come across as being the most trustful. In this context the authorities are especially being called on to take action.

- From the point of view of the interviewees mobile telephone companies, although interested in their advantages, are highly competent when it comes to technology and they are the ones who know about existing networks and networks in the planning stage and because of this an intensive information policy, especially from the providers is called for.

- Environmental and citizens' action groups are the ones who were perceived as informing the public about location disputes between residents and providers, and for safeguarding the public's interests. Although the involvement of these groups was seen as positive, those interviewed regarded this the job of the municipalities, who are obligated to provide the necessary information.

- Information concerning electro smog was partly perceived as contradictory. In-

formation campaigns seemed successful when they focused on eliminating uncertainties and obfuscating information.

- As a rule people are not informed about the competency areas of individual organs under government control. Therefore, it seems to make sense to process information uniformly under the same roof in order to increase the level of consistency and credibility. A high level of involvement with regard to the EMCE debate is expected from the Federal Environmental Ministry, the Federal Ministry for Industry, and from the Ministry of Health.

4. The results of a study comparing different countries

The debate on the possible risks posed by electromagnetic fields in other European countries is based on different focal points. As a general guideline almost everywhere the ICNIRP-value limits (International Commission on Non-Ionising Radiation Protection) recommended by the European Council are valid. There are, however, a few exceptions on a national level, where a country has legally established these value limits, for example in Germany. There were essential differences with regard to value limits and other basic conditions when the different countries were compared within the framework of this study. In particular, the debates that are taking place in each individual country proceed very differently.

Great Britain can be used as a "positive" example for its rational dialogue on EMF-residual risks. In Great Britain the authorities and the network providers have been successful in extending their networks and have successfully continued to expand without any disturbances or protest. This is due to an early and foresighted information policy. Plans as to where a base station will be set up are published and the municipalities are to a great extent included in the decision. In regions where

the protest potential may be high, mediators are sent in and clearing offices are set up. Moreover, already years ago projects on potential risks were carried out with scientific investigations. The Stewart-Report, where many different actors participated, contributed to the excellent reputation the British have with regard to their value limit policies. Many of the recommendations made in the report have in the meantime been put into practice, for instance intensifying the measuring operations in accordance with German location procedures as well having the network operators expand their information policies.

"Negative" examples for how a national EMCE-debate is progressing are: Switzerland, Austria and especially Italy. The politically normative introduction of the so-called "precautionary value-limits", which are currently well below the ICNIRP values, have on the whole lead to an intensification of the public debate. The Swiss value limits which are lower by a factor 10, the "Salzburger milliwatt" and the different regional value limits in Italy have made people become more apprehensive and has caused the protest potential to increase. There is no end in sight to the new demands being added to the catalogue of demands by citizens' action groups, constant inquires about value limits has led to a "value-limit spiral". Precautionary value-limits which are not based on plausible scientific correlations, can be correctly regarded as the result of a political negotiating process and correspondingly they are subjected to continuous demands from the public to keep on lowering the value limits.

A significant result of this comparative study is that many measures and demands are merging closer together in order to de-emotionalise the public debate and to re-establish trust in public and research institutions and in the network operators; information campaigns, dialogue processes among social groups, locations being

announced to the public, control measurements, intensifying research all belong to the set of measures that are being taken by the network operators and the authorities. Informing the public as early as possible about extension plans as well as including municipalities in location decisions are additional steps which will reinstate trust. The measures which have been taken in Germany are being closely watched from abroad.

5. Future prospects on how the course of the EMCE-debate will continue

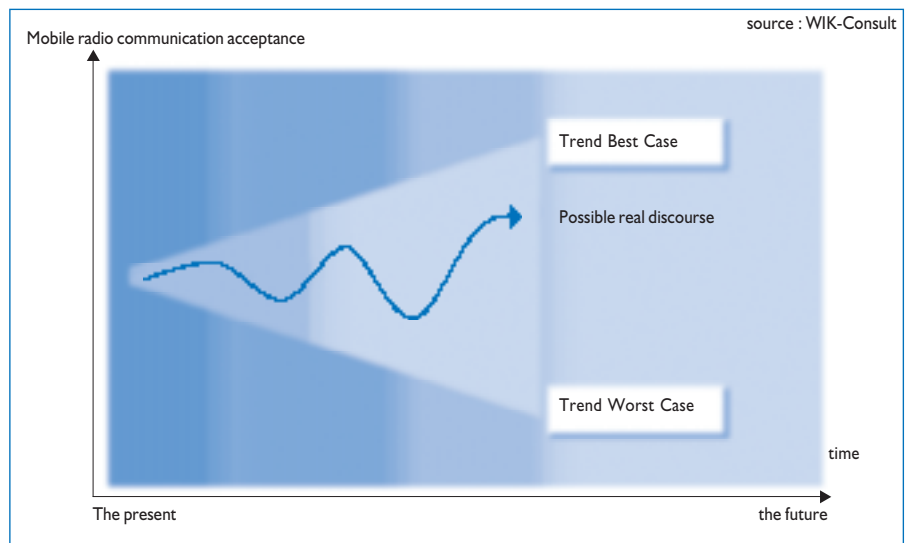
Without a doubt the EMCE-debate in Germany is in a decisive stage. All of the involved actors are aware of this. In the middle of 2001 when the protest potential was on the rise, associations, municipalities, and network operators undertook some important measures, but it is still not clear today if the effects of these measures had any significant influence or if they are sustainable with regard to the de-emotionalization of the EMCE-debate. The cornerstones of these measures are: the federal government adopted a catalogue of precautionary measures, intensive support of research, the commitments the network operators made concerning self-regulation, as well as the agreement the network operators and the municipalities made that in the future they will work more closely together concerning location decisions.

With regard to these measures, two scenarios were described in the survey to find out to what extent the public, the experts, the network operators and politicians were willing to compromise. On this basis, approaches and measures were discussed in detail in interviews with experts, representatives of different authorities, companies and associations, to find out what could contribute to a more objective debate. In one of the scenarios a negative development was outlined as the "worst case scenario" (latent conflict), in this sce-

nario during the course of the debate the confrontation intensifies. As a result many municipalities, cities and townships are forced by their citizens to exert influence on the extension of the networks. The other scenario the “best case scenario” (“discourse and compromise”) was conceived, where trust is regained and there is a growing acceptance of network infrastructure because numerous measures providing information and aiding discourse have come from the side of the public institutions and the network operators.

If further developments along the lines of “discourse and compromise” continue or the scenario “latent conflict” is more probable, essentially depends on the success of the measures described above. Citizens’ demands should be urgently met; specific information should be made available to specific target groups. In the meantime there is a real flood of EMCE information and it is getting more difficult for laypersons to acquire the relevant information needed for making decision. The setting-up of a EMCE-information portal supported by the BMWA can contribute a great deal to this, and to structurally process information in such a way that it is understandable for different sections of the population. It is also just as important, especially with regard to network operators that they proactively discuss the problem on site.

For the development of the EMCE-discourse along the lines of the “best case-scenario” it is decisively important that harmonization of the value limits is maintained. Therefore, discussions with cities and municipalities should be sought out, so that the menacing situation of “island solutions” does not occur in Germany, where different value limits counteract each other. It is also important that there is some kind of uniformity to the argumentation the actors are communicating. A comparison of the different countries urgently indicates that non-uniformity or



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contradictory statements considerably contribute to the public’s uncertainty.

It can finally be said that the results of the research programmes initiated will play an essential role in the future course of the debate. However, one should not trust that these results will automatically result in a de-emotionalization of the debate; what the political side is currently hoping for. Moreover, from a scientific/theoretical and methodological point of view there are too many fundamental objections. They could however have a positive effect when they are communicated and conveyed to a broad public so that they are easily understood by laypersons.

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Footnotes

¹Franz Büllingen, Annette Hillebrand, Martin Wörter: Electromagnetic Compatibility Concerning the Environment (EMCE) in a public debate- situation analysis, the acquirement and evaluation of strategies while taking into account UMTS-technology in a dialogue with citizens., Bad Honnef 2002. The study can be obtained from WIK for a fee of •50.00.

²The difference mentioned resulted in: sleep being affected, and in the fact that the immune system and pacemakers were not regularly taken into account during the last years.