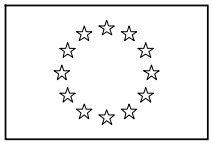

COMMISSION OF THE EUROPEAN COMMUNITIES

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**REPORT FROM THE COMMISSION
TO THE COUNCIL, THE EUROPEAN PARLIAMENT,
THE ECONOMIC AND SOCIAL COMMITTEE
AND THE COMMITTEE OF THE REGIONS**

# EU Infrastructures and the Year 2000 Computer Problem

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# Q3 1999

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# 1 EXECUTIVE SUMMARY

In its final report of 1999 on EU preparations for the Year 2000 (Y2K) Computing Problem, the European Commission has compiled information from various sources, including EU governments and the Infrastructure Providers Workshop which it hosted at the end of September 1999.

***Countries and sectors throughout the EU now report that their preparations are essentially complete***, and that the rigorous contingency plans which they have established to cope with exceptional events have been tested and reinforced to cope with possible Y2K problems. They consider themselves to be ready and expect no material disruption to their operations. Their confidence is supported by the unprecedented degree of industry and private-public collaboration which has taken place during 1999 to address this issue. Indeed, many believe that their ability to detect and respond to problems which may occur at year end is now greater than at any other time.

Nevertheless, although dealing with the technical problem at the root of the "millennium bug" has been a generally straightforward, if resource-intensive and time-consuming, task, ***resolving the related business and political issues has been much more difficult. It is in this area where certain issues remain***.

Having achieved individual readiness, organisations must then ensure the reliability of their supply chains. Understandably, given the difficulty and expense of auditing other companies, the determination of external supplier compliance is a process which is frequently obliged to rely upon unvalidated supplier claims. This increases ***the need to have effective business continuity plans in place***. Equally important is the ***exercising of these plans under various simulated conditions***. Those who have already carried out this step confirm the benefits of training and drilling in real-life situations.

As organisations finalise their contingency preparations during the final quarter of 1999, many plan to implement internal "crisis cells" or "command centres", joining sectoral, national and global networks to exchange information on the situation. In general, these efforts are focused on the critical period following midnight on 31 December 1999. Nevertheless, normal operations and peak loads may not occur until the first working day of the year, with the full impact of any problems requiring days, weeks or even months to become apparent. ***Organisations should thus consider retaining a certain increased level of monitoring and capacity to react throughout next year.***

The intensive remediation and replacement of IT systems which has taken place during 1999 has already resulted in numerous reports of the millennium bug "biting". It seems inevitable that widespread changes to IT systems on such a large scale will create its own problems, many of which are only indirectly attributable to the Y2K problem itself. At this stage, the effect is primarily irritating, but ***an increased volume of such incidents occurring during a short time period may place a heavy demand on resources, and possibly lead to unjustified concerns regarding the actual effect of the Y2K problem.***

The uniqueness of the Y2K problem lies in its global, pervasive nature, and the inability to predict its ultimate consequences. ***This uncertainty, both in terms of the impact of the problem and of the reaction of the public, is now the greatest concern in the EU, as elsewhere.*** Thus far, the EU public appears to

feel sufficiently well informed but not unduly concerned, and this situation is undoubtedly due to the intensive efforts made by governments and industry to provide them with reliable and useful information.

***The key to retaining public confidence during the run-up to the new millennium, as well as at the beginning of next year, will depend upon the close monitoring of public and media opinion, and managing their expectations.*** A successful communication strategy will require a sustained continuous effort from the many organisations involved, working together.

***A final concern of governments is the possibility of serious disruptions occurring in less prepared countries.*** The normal humanitarian organisations have recognised this possibility and are gearing themselves up to provide aid if it should prove necessary. At the same time, there may be a need to assist these countries in restoring normal services. The International Y2K Co-operation Centre, working with various governments and organisations, including the G8, is examining how support for reconstitution efforts could be made globally available.

## 2 INTRODUCTION

*The final report on EU preparedness for 1999…*

In its final report for the third quarter of 1999, the European Commission provides an overview of the current situation of major infrastructures in the EU, highlighting their preparations and identifying how issues are receiving attention. These communications have been produced on a quarterly basis since December 1998 and reveal how the situation continues to progress and evolve.

*…contains information collected from both the public and private sectors…*

Once again, the report contents are based upon information provided by the relevant administrations, regulatory and supervisory authorities in the Member States, as well as by European and international associations. Countries which made specific contributions include Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Sweden, and the UK. Substantial information was collected during the Infrastructure Providers Workshop hosted by the Commission at the end of September 1999. The overall reporting timeframe was September to mid-October 1999.

*…with a particular focus on cross-border issues and activities*

The particular industry sectors to be reported on were selected for their economic and social importance, and their relevance in a cross-border context. In this respect, it is important to note the collaboration which has taken place within the EU between the government and industry bodies dealing with the Y2K problem. Regular workshops have been hosted by the Commission since 1997. The Cologne Summit conclusions requested the Commission to convene a high-level working party to "*…put forward proposals for strategic decisions which may be required within the European Union to ensure the proper functioning of essential areas of infrastructure should computer problems arise in connection with the change of millennium.*"

*Close collaboration on Y2K matters continues to take place within the EU…*

This group has now met on three occasions and discussed various issues, including nuclear safety, strategies for communication with the public, consistency between national contingency plans, and the implementation of a communication system between EU Member States during the rollover period. It will continue to meet on a monthly basis until the end of the year, and possibly thereafter.

*…with the Commission acting as a facilitator for the exchange of information*

The role of the Commission is to facilitate the exchange of information on the Y2K problem by collecting and publishing information. It is not possible to carry out an independent assessment of the information which has been received. Moreover, the infrastructure sectors described in this report are interdependent, and within the EU, such organisations may be publicly owned or private, some are closely regulated, and in certain countries there will be a single major player, whereas in others there may be hundreds of companies of various sizes.

*This EU overview suggests links to sources of more detailed information*

It is thus inevitable that in such a report at EU level, the overview of the preparedness of these sectors must remain rather superficial. It is for this reason that an extensive list of website addresses is included in the annex, for those interested in specific organisations and sectors to obtain more detailed information.

# 3 ENERGY

## 3.1 Electricity

### 3.1.1 Overview

*The EU electricity supply industry reports that it is essentially ready…*

The electricity supply industry reports that their remediation efforts to ensure that systems are Y2K compliant, to the extent which this is possible, are now complete, or nearing completion. Their current work thus concentrates on finalising contingency plans. In fact, the electricity supply industry, which must continually match the supply of electricity with demand under constantly changing conditions, normally operates on a *de facto* contingency basis, although much greater attention is now being given to the date change period.

*…as a result of extensive preparations and active co-ordination at European level*

The electricity supply industry in Western Europe, as represented by Unipede / Eurelectric and UCTE, recently reaffirmed their commitment to "Business as Usual" in the supply of electricity and the maintenance of electricity supply quality. Behind this commitment are extensive preparations which the industry has been undertaking over a number of years. These have been described in detail and co-ordinated between supply companies through the regular quarterly meetings organised by the industry association, Unipede/Eurelectric, with the most recent meeting held on 15 September.

*There is agreement to maintain cross-border electricity flows during the rollover period*

With respect to electricity links between countries, a policy has been agreed within UCTE for these connections to be maintained in operation, though with minimum electricity flows at the rollover period. This is consistent with contractual and other obligations, so that electricity flows can be increased if assistance by one party is required. This policy has also been adopted by the CENTREL grid, which is connected to the UCTE grid, with similar arrangements also being applied to the separate Nordel grid.

*Continuity of electricity grids has been an issue of particular concern…*

The importance of maintaining the continuity of the electricity grid, which is an essential link in the supply chain from power stations to customers, has been recognised. Moreover, the sudden loss of several large generating units, or of very large customers, would tend to destabilise the grid, which, if seriously affected, could create further problems. Due to the importance of the grid to electricity supply, the Commission organised a workshop in Brussels on 22 July with the major grid operators across Europe, including the CEEC and NIS and other interested parties, for a comprehensive discussion on this particular issue.

*… with respect to the potential impact of grid failure on nuclear power plants*

An additional consideration is that potential instabilities in electrical frequency could be induced by large losses. These instabilities could cause power plants to disconnect from the grid, thus further reducing supply and increasing the risk of disruption of the grid. Such disconnections of a nuclear power plant (NPP) would require stand-by electric power (alternative grid connections and local back-up generators are standard features of any NPP) to be activated to support the essential functions of the NPP. A similar workshop on electricity grids, and in particular the interface with nuclear power plants for CEEC and NIS, was organised by the IAEA in Bulgaria on 13-15 September.

*Contingency plans to ensure grid continuity include back-up telecommunication facilities,…*

The results of these workshops have demonstrated that the electricity supply industry is fully aware of the key importance of maintaining grid continuity, including the particular issues relating to NPPs, to which they have been devoting much attention. In general terms, electricity grids are electro-mechanical in nature and not directly date sensitive, although information and control systems may be. Efforts have therefore been focused on such systems, and on communications in general, which are essential to the operation of electricity supply. Electricity firms are organising back-up communication facilities in addition to the dedicated networks which are typical of the industry, to ensure continuous operation in the event of the congestion or failure of externally provided communications.

*…additional reserve generating capacity and fuel stocks,…*

Other measures are also foreseen. Reserves of instantaneously available generating capacity (spinning reserves) will be considerably increased above normal margins, to cope with the possible failure of an on-line generating plant. The reserve generating capacity will be diversified in terms of both fuel and location, to give additional security and to minimise possible strains on electricity grids. Supplies of different fuels for generating plant and fuel stocks will be assured. Planned outages of plant or other key items such as transformers will be avoided as much as possible, with maintenance completed well beforehand. Reports also indicate that staffing will be significantly increased for the rollover period, with experienced staff trained in contingency situations, and the plans themselves tested through drills. These contingency plans must be capable of dealing with external failures such as in telecommunications or fuel supplies, as well as internal failures.

*…and working with customers to minimise significant fluctuations in demand*

With New Year's Day falling on a Saturday and forming part of a holiday period, electricity demand is expected to be significantly below winter peak levels, when industry and commerce is in full operation. This will also depend on the weather, which in northern and central Europe can be very severe. Many electricity companies have been in close contact with their large consumers, to gain prior knowledge of their expected demand during the rollover period. Rapid fluctuations in demand are the most difficult to handle, hence the utilities are dissuading people from switching to stand-by generators just before the rollover, and then returning to public supply just afterwards, as this tends to destabilise the system. It is useful for electricity suppliers to know when demand will increase back to normal levels, on the 3 or 4 January, or even later, as industry and commerce return to normal levels of activity. Utilities are prepared for possible problems in these periods, as the infrastructure comes into use at full load for the first time in the new millennium.

*Nevertheless, the wider public needs to be made fully aware of the situation and plans*

The wider public and smaller enterprises need to be informed that the electricity supply industry is fully committed to business as usual and has undertaken very extensive measures to fulfil this commitment. To some extent, this is to discourage unusual behaviour which could in itself create problems, although this is less of a problem for electricity than other sectors. Nevertheless, the supply industry and national administrations must keep the public well informed.

### 3.1.2 Preparations in the EU

*EU findings indicate that the Y2K impact on the electricity sector appears to be minimal,…*

Many of the large electricity suppliers in the EU are now reporting the completion of their compliance activities. In Sweden, Svenska Kraftnät noted that very few serious problems had been discovered, indeed, none of their systems would have resulted in power supply interruptions or the disconnection of any grid component, even had no action been taken. To place this in context, they also reported that the normal average frequency of disturbances to the national grid alone is once every other day. These disturbances occur when an automatic protection system is activated and causes the disconnection of a grid component, which rarely leads to interruptions in customer supply. Similar findings are reported by other electricity companies throughout the EU.

*…and Y2K is also unlikely to provoke problems in building heating systems*

Sweden has also carried out a detailed examination of the possible impact of Y2K on district heating, which included an assessment of the risks associated with building systems used to control, regulate, and optimise the climate. They reported that non-compliant systems were discovered in approximately 6% of buildings. In particular, the study tried to identify non-compliant systems which would malfunction if no action was taken. In none of cases examined would such systems have resulted in a loss of heating, although there was a risk of financial consequences. The majority of the electricity produced in Austria is from hydroelectric power stations, which are considered to be less sensitive to the Y2K problem than thermal power stations, and moreover have a shorter start-up time following a breakdown. Scenarios and action plans have been developed to take into account different water levels, energy demand, grid problems and their effect on hydro power stations.

*Some EU countries are also exercising their rollover plans*

In Belgium, the electricity sector (all producers and the national grid) conducted a successful exercise on the 9/9/99 to test the organisation planned for the rollover. The objective was to ensure that all participants understood their roles and reacted appropriately to simulated events, and that communication worked effectively. A second rehearsal is scheduled before year-end to fine-tune the preparations.

## 3.2 Natural Gas

*The gas sector has reached a similar state of preparedness*

Natural gas is also considered a vital resource, especially for heating, and the gas supply industry in Europe has similarly devoted considerable effort to assure supply continuity. Again, remediation work by the supply industry in the EU is complete or nearing completion, with the emphasis now on finalising contingency plans. As with other major energy forms, and given the importance of energy supply as a whole, extensive contingency plans already exist for the gas sector and these form the basis of the plans for the millennium date change.

*Given the EU's reliance on foreign gas supplies,…*

Indeed, about 43% of the EU's gas supplies are imported, mainly from Norway, Algeria and Russia. Thus to assure normal security of supply, the substantial measures in place include storage, flexible supply arrangements with indigenous producers, and interruptible supply contracts with large consumers. These are being adapted as appropriate to deal with failures caused by Y2K. In addition, all

vital installations will be manned, local emergency power supplies will be maintained on stand-by, alternative telecommunication lines and private radio networks are being established, and stand-by personnel will be reinforced.

*…gas companies are working closely with external suppliers*

With respect to upstream suppliers, the gas companies are in continuing dialogue with their external suppliers in order to exchange information, identify problems, and co-operate in finding solutions, with the overall aim of avoiding interruptions to gas flow. It has been confirmed that external suppliers are co-operating fully, and are reported to be addressing the issue very professionally.

*The issue of cross-border compatibility between contingency plans…*

One issue, first raised at Infrastructure Providers Workshop held in April this year with representatives of the gas supply industry in Europe, was the extent to which different gas supply companies' contingency plans are compatible with each other, particularly regarding cross-border flows in the event of possible interruptions to external supplies. The Commission wrote to the European gas companies' association Eurogas, seeking further assurances on this issue.

*…is receiving attention at European level*

In response to these enquiries, the dispatching officers of companies in the Eurogas member countries met to further discuss and co-ordinate their activities. In addition to confirming the extensive preparations which the gas companies have made, including special attention to critical services such as telecommunications, power supply, and upstream natural gas deliveries, the companies also reported on the enhanced preparation and co-ordination of their contingency plans, including the cross-border dimension.

### 3.3 Oil

*In spite of the strong dependency on oil imports in the EU,…*

Oil supply is equally vital to a modern economy, notably for transportation and heating. Moreover, net oil imports, mainly crude oil, account for about 80% of total consumption in the EU. However, a number of significant factors mitigate the risk of interruption to supply resulting from Y2K problems.

*…significant oil stocks exist in accordance with EU legislation ,…*

Firstly, crude oil and oil products are readily stored throughout the supply chain, including the storage of heating oil by domestic consumers. To ensure general security of supply, EU legislation requires Member States to store the equivalent of at least 90 days consumption of oil, held by the industry and/or specially created oil storage agencies. Further EU legislation covers the use and release of oil stocks and related measures in case of oil supply difficulties.

*…there is great diversity in both supply and the supply infrastructure, …*

A second factor tending to mitigate the vulnerability to Y2K of the sector is the diversity of oil supply, in terms both of companies operating in competition to supply consumers, and of supply infrastructure, which can occur by pipeline, rail, barge and road tanker. The third factor is, as with other energy supply industries, the very extensive work carried out over several years by the oil supply industry on remediation and contingency planning.

*…and the extensive efforts of the oil industry should altogether reduce the impact of any supply disruptions*

It is thus likely that component failures in supply systems which may arise from Y2K problems should be surmountable by the security stocks and other contingency measures in place. Nevertheless, there is a need to monitor the situation as the year end approaches, primarily due to the nature of the oil market. A key aspect is the role, in the short term, of market perceptions, and linked to this, the relative volatility of oil prices.

*Nevertheless, managing public confidence is a key issue for the oil industry as well*

It is therefore important that the oil supply industry takes the measures necessary to prevent shortages of specific products such as motor fuel, which could suffer from a surge in purchases as the year end approaches. More generally, the oil stocks and associated measures required under EU legislation should be in a high

state of readiness, to be able to deal appropriately with any possible major supply problems, either internally or externally, which could arise around the date change period. Equally, the public should be informed of the very extensive measures in place for such an eventuality, in part to discourage possible harmful behaviour. The EU, and in a broader context the International Energy Agency (IEA), are currently examining these issues and the need for further steps, such as prior agreement on stockdraw in certain circumstances, which may be required to address them.

*There is previous experience in coping with interruptions to oil supplies*

As an example, Irish Department of Public Enterprise has a role in response to oil supply disruptions generally. In addition to the maintenance of formal national plans (currently under review) to deal with major supply disruptions, the Department has a proven capability to facilitate the co-ordination of an industry-wide response to more localised interruptions. This response draws on the expertise and resources of the oil companies, individually and collectively, the Irish National Petroleum Corporation 's trading and refining operations and the National Oil Reserves Agency. These arrangements have provided a flexible and effective response to the two serious interruptions in oil supplies which took place in recent years, and would be capable of speedy implementation in the event of a residual Y2K disruption.

# 4 NUCLEAR SAFETY

## 4.1 Overview

*There is a potential impact of Y2K on nuclear safety*

There are a number of potential problems in nuclear power plants (NPPs) relating to safety that can be associated with the Y2K problem. The first of these are the direct safety issues, which concern the software, hardware, and embedded chips used in safety-related systems. The relationship between power plants and the electricity grid or other generation facilities may also induce problems. Should grid problems arise, it is important that back-up mechanisms, such as batteries and diesels, operate to ensure emergency electricity supply to cooling systems. Finally, there are also concerns that multiple failures, though not intrinsically unsafe in themselves, could unduly overload NPP operators.

## 4.2 International Activities on Nuclear Safety

*IAEA missions to nuclear power plants have revealed Y2K issues, but these are not safety critical*

WANO, the World Association of Nuclear Operators, has taken initiatives since 1998 to raise awareness and share information amongst its members. The International Atomic Energy Agency (IAEA) has launched a special project to address the Y2K problem for NPPs (particularly in CEEC, NIS and China). It has performed a number of missions to NPP sites. These have revealed a number of Y2K issues although these are generally not in safety critical systems. Instead, they may present a risk to continued operation, and an associated risk of operator overload. The IAEA plans to undertake further missions but it is limited by the unavailability of Western experts.

### 4.3 EU Nuclear Safety

*The rigorous programmes in place throughout the EU, closely monitored by regulators, will be completed by October*

All Member States with operating NPPs have a programme to address the issue. Although each programme differs in detail, each requires the licensee to identify systems that might be affected, to rank them by nuclear safety significance, to test each in turn and to modify or replace any that fail. Regulatory authorities are reviewing the content of these programmes and are monitoring their execution.

Some Member State NPP operators reported Y2K readiness at the end of June 1999. Others executed some remediation and test activities during summer shutdown periods, and all plan to end such work by the end of October. All Member States' NPP operators are now preparing risk mitigation and contingency plans. A number of research reactors will be closed over the critical dates. Several regulatory authorities plan to conduct inspections during the autumn, including the examination of contingency plans.

*Problems in EU NPPs have been identified and corrected*

As an example, the Barsebäck nuclear plant in Sweden, a production reactor, reported that it had discovered fifteen components in its process systems which required correction. A third of this equipment was critical to plant operations and was given priority for corrective action, which was completed in April. In Finland, NPP testing involved resetting system clocks during maintenance breaks to the year 2000.

The systems and components of all German NPP have been classified according to their possible impact on safety and plant operation. In total, 11,000 NPP systems and components were inventoried and checked, of which 120 were found to be non-compliant. The adjustments to be performed on the systems and components relevant to safety or availability were concluded by July 1999 and are in the process of being verified by experts. In German NPPs, safety critical functions as reactor shut down are based on hard-wired control systems. Their functional performance is not influenced by the changing of the date. Exceptions such as digital devices for signal conditioning have been investigated. Some digital devices concerned with plant safety were remediated, such as the rotation speed transducers that control the emergency power diesel generators.

*Y2K is discussed regularly with industry groups*

The Commission is in regular contact with relevant industrial groups (FORATOM, WANO, EURELECTRIC, UNIPEDE) for information on their activities. The Commission has raised the Y2K issue for discussion with Member State regulators in the relevant working groups, promoting the spread of best regulatory practice. There is no perceived need to increase the Commission's activities with respect to Y2K compliance of NPPs in the Member States, since they report that they are already adequately addressing the issue.

### 4.4 Nuclear Safety in Central and Eastern European Countries (CEEC) and New Independent States (NIS)

*Possible concerns for CEEC and NIS NPPs are worsened by the lack of practical information*

Central and Eastern Countries (CEEC) and New Independent States (NIS) are reportedly taking measures, however, it appears that the level of awareness and action is not homogeneous. Given concerns that the preparations of the electricity sector in these countries tend to be less advanced than those of the EU, the likelihood of grid problems arising may be greater, increasing the possibility of problems with ensuring adequate reactor shutdown (cooldown) or of overloading operators. The Commission July grid conference discussed (see section 2.1. on Electricity) the impact of Y2K on EU, CEEC and NIS grids and possibilities for international co-operation, although no concrete actions were identified.

*A number of supporting programmes for these nuclear installations exist*

Considering the tight time scale and the absence of any mandate for the European Union to take an initiative, the Commission is channelling a major effort on supporting the IAEA[1], WANO[2], ISTC[3], and STCU[4] work.

At the Commission's request, the issue was addressed at the TACIS on-site assistance meetings organised by WANO in November 1998 and May 1999. In December 1998, the Commission requested TACIS on-site assistance contractors to ensure the Y2K compliance of equipment delivered under EU programmes. In early 1999, the Commission initiated a new inquiry with all EU utilities involved in the on-site assistance programme to raise awareness. The most recent on-site assistance contracts include a provision to address the issue at specific sites. In the framework of the EU TACIS on-site assistance programme, the issue has already been taken up by one contractor at Leningrad NPP.

*A TACIS project will carry out an independent review of certain NPPs in Russia and the Ukraine*

A specific Tacis support project is being implemented by WANO as Tacis contractor. WANO experts have been visiting designated nuclear power plants in the Ukraine and Russia. The objective of the project is to perform an independent review of the Y2K status and to support contingency planning efforts. This is done in full co-ordination with the IAEA.

*Special funds are available to assist Russian and NIS institutions*

The ISTC has established a special fund (2 M$) to assist Russian and NIS institutions in solving issues related to the Y2K problem, involving individuals and teams from the former weapon research institutes. A number of project proposals have recently been approved. These projects, developed with the participation of the Russian Ministry of Atomic Energy Minatom and the Russian Ministry of Emergency Situations, will, amongst others, provide direct support to nine nuclear power plants and for the evaluation of nuclear fuel cycle installations. Funding is directed to co-ordination with Minatom, to equipment, software and hardware upgrades, and technical expertise. The STCU is undertaking similar efforts in the Ukraine.

*The Commission is also encouraging the exchange of information between nuclear regulators...*

The Commission's CONCERT group, (consisting of the senior nuclear regulators of 25 EU, CEEC and NIS countries) has discussed the issue on three occasions since June 1998 in order to increase awareness. All CEEC and NIS nuclear regulatory authorities have action plans, several developed following the first discussion. The content of these plans and their state of progress varies significantly. Some countries report being as well prepared as their EU counterparts, while others are significantly less advanced.

*...and providing them with direct assistance*

Following requests for specific assistance, the Commission is now providing support to the Bulgarian ,Slovakian, and Russian nuclear regulatory authorities.

The G-24 Nuclear Safety Assistance Co-ordination (NUSAC) secretariat, hosted by the Commission, raised the Y2K issue at its March 1999 meeting. The meeting brings together CEEC and NIS countries and the donors of nuclear safety assistance. The meeting considered the role of donor countries in assessing the Y2K compliance of equipment that they have supplied.

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1 IAEA: International Atomic Energy Agency.

2 WANO: World Association of Nuclear Operators.

3 ISTC: International Science and Technology Centre, Moscow, Russian Federation.

4 STCU: Science and Technology Centre of Ukraine, Kiev, Ukraine.

*EU countries also carry out bilateral activities*

The UK Department of Trade and Industry funded a study[5], the results of which were circulated to utilities participating in the TACIS on-site assistance programme. Finland has provided assistance to the Leningrad NPP near Saint Petersburg and to the NPP in the Kola peninsula. Representatives from Russian nuclear power plants have observed the Y2K preparations carried out by the Loviisa NPP in Finland, which contains Russian-made reactors. Germany is providing assistance to the Ukrainian regulator and NPPs. Further reports on bilateral actions have been requested from Member States.

# 5 TRANSPORT

## 5.1 Aviation

### 5.1.1 International Activities in the Aviation Sector

The aviation industry is essentially an international industry, thus the Y2K activities of international organisations, in which EU industry and regulators participate, are very important.

*ICAO Member States are reporting on the status of air traffic services, airports, and operators*

On the basis of the Y2K assessment criteria developed by the International Civil Aviation Organisation (ICAO), which comprises Air Traffic Services, Airports and Aircraft Operators, and as decided by the ICAO Assembly, the ICAO Member States have been providing information on the compliance status of these services. The original timeframe to respond was 1 July 1999, but replies have been coming in during the summer, and a number of non-EU States have yet to report. The non-respondents are generally not considered to have particular significance for European aviation. The information provided has been made available by ICAO to authorised officials. In order to have an up-to-date view of the situation as it develops, this information will be maintained by the States, as appropriate.

*However, some reports are inadequate or incomplete …*

As could be expected, the status of compliance and contingency planning varies from country to country, and the extent to which the expected target dates within the last quarter of the year will be met remains an open question. At the same time, country reports are often incomplete and/or vague in their details, thus in such cases a full or accurate picture is not available.

*…thus it is not possible to reach an overall assessment of the national or regional situation*

A first global readiness status report based on this survey has been prepared by the ICAO secretariat and made publicly available in the latter part of September. However, due to the limited mandate given to the secretariat, the report restricts itself to summary statistics and falls short of providing an assessment of the situation in the different countries or regions.

*ICAO has established regional ATS co-ordination centres…*

In order to ensure that strategic ATS routes remain open, contingency planning efforts are focusing on providing back-up power and telecom facilities. Eight regional contingency co-ordination centres will be established to collect and disseminate information to the countries of their region, permitting corrective actions of operational contingency measures to overcome any potential disruptions of ATS. A Global Y2K Co-ordination Unit will be operating in Montreal.

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[5] The Millennium Problem. Raising the awareness of nuclear power station operators and regulatory authorities in Central and Eastern Europe, September 1998

*…and Eurocontrol will be responsible for co-ordination in the European region*

EUROCONTROL has pursued its activity in the area of Air Traffic Management, now focusing particularly on the development of contingency plans. In co-operation with ICAO, Eurocontrol is proceeding with the setting up of a European Regional Y2K Co-ordination Unit (EUR R Y2K CU). This Unit will involve experts to address Y2K problems for the entire ICAO European Air Navigation Region, as well as the interfaces with the other Regions. The Co-ordination Unit will be physically located in the Central Flow Management Unit of Eurocontrol in Brussels, where it will operate on 31.12.1999 and 01.01.2000. A regional "dry-run" exercise on the monitoring and reporting procedures for the European Region is planned for 11 November 1999.

*ECAC is trying to obtain information from countries which have not responded to ICAO…*

The European Civil Aviation Conference (ECAC), in whose activities the Commission participates, has examined the legal aspects of eventual courses of action being considered in connection with Y2K readiness. They are also examining possible limitations of operations in cases where there is no information on compliance status, and/or there is reason to suspect non-compliance. At an extraordinary meeting of Directors General for Civil Aviation held on 18 October 1999, it was decided that the ECAC President would address the states which have not yet replied to ICAO, indicating that the continued absence of information raises serious questions about permitting flights to/from these states and flights of their air carriers, and requesting that all expected information be provided by 26 November.

*… andto resolve outstanding issues where available information is inadequate*

Furthermore, for countries where the information provided is considered inadequate, the ECAC Member States were asked to make use of a model letter in addressing these countries, requesting early consultations so as to resolve all outstanding issues before the end of November. The DGCA also noted the possibility to insert in traffic permits reference to potential Y2K problems, thereby reserving the right to suspend the permit if there is no assurance of Y2K compliance. The Co-ordinating Committee of ECAC will examine the situation at the end of November and, if necessary, will convene a special meeting to consider appropriate action.

*JAA are ensuring that all types of aircraft are compliant*

The Joint Aviation Authorities (JAA) have been pursuing efforts with the ECAC member states and JAA national authorities concerning outstanding issues, such as modifications performed by those who are not type certificate holders, and assessment criteria relating to maintenance organisations. Type certificate holders have already informed the authorities about the satisfactory completion of their plans to ensure a safe transition. The JAA will convene a meeting of all airworthiness authorities of ECAC to cover outstanding issues, and will make contact with two former Eastern countries to obtain information relative to aircraft designed in these countries.

*IATA is working closely with the airlines and other parts of the industry*

The International Air Transport Association (IATA) has pursued its activity on the Y2K problem, through the Y2K Industry Project which they established in June 1998. This focuses on raising awareness, strengthening industry co-operation, collecting Y2K readiness information, and promoting contingency planning. Through IATA, the airlines have implemented a programme that includes air traffic systems and airports, aircraft, engine, and avionics manufacturers. As part of the project, IATA has been carrying out visits to certain airports and air traffic control services. IATA has been very reassuring about the progress which has been made, and is continuing to be made, on Y2K readiness, and appears confident that the air transport industry will be ready in time to operate safely, without disruption and with minimal impact on capacity.

More particularly, as regards aircraft, they do not expect any problems with on-board equipment that could affect the safe conduct of flight operations.

*ACI is sharing expertise amongst its members*

The Airports Council International (ACI) has co-operated with IATA and continued its efforts with its members, based on a program to increase awareness, to share expertise on methods of solving the problems, and to assist its members in becoming Y2K ready.

### 5.1.2 Preparations in the EU

*Thus there is confidence that the EU aviation sector will be ready in time,…*

The overall picture emerging from available information, particularly the reports of the representatives of international government and industry organisations at the Workshop organised by the Commission on 29-30 September, is that the aviation industry appears well advanced in its preparations to combat potential problems in European countries, in accordance with plans aimed at achieving compliance and providing for contingencies that may arise.

European regulators are closely monitoring and assessing the compliance programmes of their aviation sector. In several cases, this is a substantial task. The CAA in the UK, for example, currently authorises over 2000 aviation-related organisations, covering all aspects of the UK civil air transport system from airlines to manufacturers and air traffic service providers. Each of these organisations is engaged in their own individual compliance programmes, which include checking suppliers who may number from tens to hundreds.

Most of the EU's aviation industry expects to complete its preparations during the third quarter of 1999. Interface tests are taking place with neighbouring air traffic service providers. Some sectors are already compliant. Both the UK National Air Traffic Services (NATS) and the German air traffic control GmbH (DFS) have completed their programmes and stated that all their systems are compliant.

*…although it is possible that there may be capacity constraints…*

In Europe, contingency plans are being based on the normal contingency plans for the sector and cover immediate safety concerns satisfactorily, however, the possibility of capacity constraints in the days after the roll over cannot be excluded. In view of the international nature of aviation, national organisations are waiting for international plans to be completed before they can finalise their own plans. Generally, countries will require all aircraft to prove Y2K compliance and may refuse admission to national airspace where they cannot do so, they will also insist that national airlines demonstrate that the routes and destinations which they have chosen to fly to are safe. Operators which are not compliant may face the suspension of licenses and operations.

In the Netherlands, additional consideration is being given to alleviating the burden on the national air traffic system by keeping only Schiphol Airport open on the critical dates, as well as the possibility of keeping regional airports on stand-by and reserving military airfields for extra capacity. They may also decide to limit the number of flights by allowing only essential commercial air traffic and emergency flights, and prohibiting all other flights.

*...and some residual uncertainty regarding the situation in neighbouring regions*

There is confidence regarding the compliance of the Western European industry, but uncertainty persists concerning the risks associated with cross-border interactions with regions neighbouring the European Union. Information provided through the International Civil Aviation Organisation is often either incomplete or leaves questions open in this respect, and authorities concerned will be trying

to obtain missing and clear information, so as to be in a position to take measures that may appear necessary.

### 5.2 Maritime Transport

*Recent findings indicate the level of non-compliant vessel equipment is very low*

Further testing of systems and development of contingency plans has continued with progress being reported in many areas. The main risk to any ship is to its ability to navigate safely. The shipping sector has assessed Y2K compliance and developed a replacement and contingency programme to overcome the potential problems identified. However, all ships have a built-in contingency mechanism to cope with the failure of electronic equipment relating to navigation, resulting in reversion to manual methods. One of the key EU ports, the port of Rotterdam, has reported that, on the basis of their most recent findings, only 2-3% of vessel equipment inspected has been found to be non-Y2K compliant, representing a reduction from the previous estimate of 10%.

*Legal aspects relating to shipping are being addressed by the IMO*

From the shipping industry, developments concerning the IMO's Code of Good Practice were reported, in particular concerning the threat of legal action resulting from non-implementation of contingency measures. To counter this, the industry has developed the Y2K Safety Protocol. The aim is to create a protective climate for those following the Code of Good Practice from legal liability and commercial pressures through public support from the major transportation agencies and the understanding of the legal fraternity. To give legal certainty to the Code and the Protocol, BIMCO has introduced a standard incorporation clause for charter agreements and bills of lading.

*EU ports seem to be progressing…*

A number of governments have reported progress in the industry. As an example, the UK's latest state of play shows its ports to be fully tested and compliant. Replies to questionnaires sent out to Rotterdam port users in August 1999 showed around 13% to be non-compliant, although this figure is constantly improving. Ports throughout the EU may close or restrict vessel movements, as well as operations such as cargo handling and refuelling for a time over the critical period. Additional safety precautions on shipping entering the port may also be required.

*…and a number of contingency measures are being considered*

For instance, non-compliant users will be barred from navigating in the Port of Rotterdam for a period of 28 hours - the 14 hours immediately preceding and following midnight on 31 December. Indeed, no ship will be allowed to navigate on Dutch national waterways during this period unless they can demonstrate compliance. Furthermore, the Dutch authorities may take additional traffic measures, including a ban on overtaking, speed limits, the compulsory use of pilots, a ban on remote piloting, and compulsory assistance from tugs. Additional conditions may be imposed on particular categories of vessels. Ships with a potentially hazardous cargo must provide evidence that they are Y2K compliant, even if they are not sailing. Hazardous substances may only be loaded or unloaded with the permission of the competent authorities.

### 5.3 Rail Transport

*The rail sector preparations are progressing as planned…*

Rail transport operators and rail infrastructure managers in the EU have, together with their manufacturers, continued to perform compliance testing. Contingency plans covering many systems have been reported, and equipment testing is stated to be going ahead as planned. According to data available from the International Union of Railways, UIC, and the companies themselves, the industry appears confident that considerable progress has been achieved. There is

still much work to be done in all sectors but the general view is that they will be prepared by year end.

In common with other operators, Deutsche Bahn AG reported various Y2K activities in progress, such as a project for central (commercial) software and another to provide central co-ordination. More than 100,000 systems have been identified and assessed for compliance. An integrated, overall emergency management project involves all areas of DB AG, including railway stations and services, travel information and bookings, cargo, and energy. National and regional monitoring centres for the rollover are being established.

*…although train services will be interrupted at midnight in several countries*

There is, however, a recent tendency to suspend operations over the critical period (e.g. SNCF and Deutsche Bahn will interrupt their train services from 23.50 to 00.15 hours). According to the information available, this should be seen as an additional precautionary measure and does not necessarily reflect concerns regarding compliance. In the Netherlands, no rail transport takes place during any year end period for several hours before and after midnight on 31 December.

### 5.4 Road Transport

*Road transport systems are being dealt with by local authorities*

In most instances, road systems are the responsibility of local authorities, thus few EU countries are addressing this sector at national level. Countries report that local authorities are examining their operating equipment and the traffic and electrical devices controlled by computer programmes. Included are traffic light systems (controlled by programmes which make use of the calendar), data acquisition units such as permanent census points and measuring loops with stops at intervals, equipment affecting traffic flows on motorways and highways, traffic computer centres, and other operating equipment, such as tunnel installations, communications equipment, and lighting systems.

*Assessments are being carried out in some countries*

An independent assessment has been made of the readiness of all roads in the UK. For motorways and trunk roads this has been carried out by peer reviews carried out by the Welsh Office, Scottish Office, the Roads Service, Northern Ireland and the Highways Agency. Traffic and control equipment on motorways and trunk roads was found to be clear from risk of material disruption. Road management systems are nearly ready.

*Generally, there appears to be few, if any, problems related to critical systems in this sector*

In the private sector, attention is being focused on transport logistics chains, due to their importance for trade and the economy. The road sector is regarded as a low risk sector, where the problems which have been identified tend to affect less critical systems. The members of ASECAP, the association of European licensees of toll motorways, have examined the possible impact of Y2K on their activities and have found no critical technological issues. The continued safety of drivers and of their staff, which is at the top of their priorities, is not in question. The only problem which has been discovered concerns toll systems. These are now highly automated and have required a thorough review. ASECAP is thus confident that all problems have been taken care of and that their systems are ready.

# 6 TELECOMMUNICATIONS

*The telecommunication infrastructure is vital, but also robust and reliable*

The telecommunication infrastructure has been characterised as indispensable, since it is relied upon by other utility infrastructures such as energy, aviation, water and gas supply, and underpins business and commerce. Although the core of the telecommunication infrastructure is very robust and reliable, vulnerabilities are likely to exist in the infrastructure on business customer premises, which are not visible to telecommunication providers.

## 6.1 Key risks/threats/dependencies

*The key risk is therefore associated with congestion, and the possible interference with emergency services*

Despite the optimism regarding the robustness of the infrastructure, the potential for congested networks to experience interference in access to emergency numbers and services remains an issue, primarily due to the possibility of unusually heavy customer demand occurring at year end. Unlike many other major infrastructures, telecommunications is one upon which greater than normal loads are expected over periods such as a New Year. For this year, it is expected that these loads will be further increased. Telecommunication operators are addressing this risk, by dimensioning their network capacity both nationally and internationally to cope with higher load levels.

Congestion will nevertheless continue to be a risk, particularly regarding access to emergency numbers. Most operators possess the technical means to give priority to such numbers, but for many countries such a step requires a clear mandate from regulators and other authorities.

*Information to customers should prevent unusual human behaviour*

There is another risk associated with unusual patterns of customer demand over the transition period which could have a negative impact on infrastructures, including telecommunications. Appropriate information should be provided to the public in order to avoid having them continuously checking the availability of normal services during the rollover. This in itself might, on a global scale, produce more severe disruptions than Y2K.

Finally, an important source of uncertainty, and therefore a potential risk, is the state of readiness of most SMEs in this sector, for whom very little information is available.

## 6.2 Contingency planning and rollover preparations

*Extensive global testing of components, systems, and interfaces has taken place*

Extensive compliance testing campaigns at the component and systems level have been carried out both on network elements, as well as on the interfaces between networks. To date, no problems have been noted. Recently, the main activity of telecommunication infrastructure providers has been to develop and verify Business Continuity Plans (BCPs). The purpose of these plans is to minimise unavoidable risks. Thus BCPs will not replace normal operational procedures, which are already able to handle many types of problems, but would be an additional overlay to cope with unforeseen situations.

At the international level, the ITU has played an important role in developing awareness and providing support to telecommunication operators in their preparations and planning for the vast majority of countries worldwide.

*Large users are now finalising continuity plans, the status of SMEs is less certain*

On the user side, most of the large corporate users have completed their task of making their systems Y2K compliant. Current work is focused on testing and verifying their BCPs. Conversely, the state of readiness of most SMEs is still unclear, especially very small companies (<50 employees), of whom there are many in the EU.

### 6.3 Strategy for communication with public

*Command Centres will link operators together and be used to keep the public informed during the rollover*

The major telecommunication operators are establishing a variety of Command Centres to assure the internal reporting of eventual disruptions within the sector during the rollover, as well as external reporting to support and inform users, the public, and the media. However, it is important to stress again that the critical period is not only the actual rollover itself, but problems could be expected to occur over several days, particularly the first working day. Hence, an increased level of help desk and support services will be vital throughout this period.

### 6.4 Co-ordination activities

*Widespread intercarrier testing has also occurred through the ITU…*

At the international level, the ITU Y2K Task Force has stimulated, organised and carried out an extensive inter-carrier testing campaign, whose coverage and scale is worldwide. The purpose of this campaign was to build confidence between carriers in the 5 continents, as well as in their users. This campaign, which has involved the execution of more than 130 complex test scenarios, will conclude and the results made public by the end of October. Despite the voluntary nature of this Task Force and of its initiatives, the level of collaboration and the professionalism that have been exhibited in the different countries has been remarkable.

Having concluded their testing campaign, the priority is now being given to establishing an "Early Warning" co-ordination mechanism that will encourage the timely sharing of information on disruptions on a global basis at an early stage. To date, 50 carriers covering 30 countries have signed up to an agreement in this area.

*…and a global overview of operator readiness is available*

The ITU has conducted a systematic global survey and inventory of operator readiness. These results are publicly available on the ITU Task Force web site (http://www.itu.int/y2k). Currently the number of countries which have not participated in the initiatives of ITU or have not provided information on their readiness is very small. None of these are EU Member States.

### 6.5 Preparations in the EU

*Many of the large EU operators are now ready,…*

Many of the large national operators in the EU telecommunication sector are now being reported as fully Y2K compliant. Specific attention is being paid to emergency telecommunication services, which exist at national level for government users in many countries. In the Netherlands, this emergency service has been tested in detail, including a nationwide test and several local tests. The introduction of a temporary, mobile-based emergency service to augment the capacity of the emergency service is in progress.

*…with one operator, Telefonica, having tested under operational conditions*

On 27-29 September 1999, Telefonica, the Spanish national operator, carried out a real-life test using actual traffic covering the region of Murcia. The successful test included the year end rollover, as well as the changeover to 29/2/2000 and 1/3/2000 and no problems were reported. Telefonica is believed to be only operator world-wide to risk a test under fully operational conditions.

# 7 FINANCE

## 7.1 Information disclosure and Y2K readiness

*Financial services have made extensive efforts to disclose information*

The Financial Services sectors have made notable efforts to disclose information concerning the impact of the Y2K changeover in their domain, and particularly on the state of readiness of financial institutions. This activity has required the involvement of all participants of financial markets, as well as the relevant public authorities, regulators, and supervisors of these institutions.

On both international and European fronts, the sector has facilitated the exchange of information by establishing an interlinked network of web sites. It is now possible to obtain a good overview of the international preparedness of the financial sector via the websites listed in the annex of this report.

In particular, many commercial banks and payment operators in the EU and elsewhere have chosen to publish their readiness status through the Global 2000 website (http://www.global2k.com). This website is expected to shortly provide a review of the contingency planning and event management preparations of the financial services sector on a country by country basis.

## 7.2 The European System of Central Banks (ESCB) and the European Central Bank (ECB)

*The ECB has benefited from the compliance of its modern IT systems,…*

The creation of the ECB in June 1998, accompanied by the establishment of the single monetary policy in January 1999, required the implementation of several new IT infrastructure systems and applications, connecting the ECB with national central banks (ESCB-wide systems). These systems were developed, tested and implemented primarily between 1995 and 1998, at a time when awareness of Y2K issues was already very high. Furthermore, the ECB does not possess major legacy systems, hence has avoided the situation of having a large volume of software produced during the 1970s, 1980s and 1990s in use.

*…and is co-ordinating an initiative to ensure overall compatibility between ESCB systems*

This sophisticated technical infrastructure has been enhanced with applications used to conduct monetary policy operations and to exchange statistical and non-statistical information needed for monetary policy decision-making. A decision was taken within the ECB to monitor both local and ESCB-wide Y2K remediation and testing. The ECB is therefore conducting two interrelated, parallel compliance projects. One concerns internal ECB systems and the other, pursued jointly with the NCBs, will establish Y2K compliance across the common systems and components used by the ESCB.

The general ESCB-wide Year 2000 compliance project will not ensure the compliance of individual ESCB counterparties for market operations or payments (typically private banks and other financial institutions in EU Member States). The compliance of interfaces between the NCBs and their counterparties remains the responsibility of the institutions themselves. The ESCB is nevertheless confident that they are well prepared.

As a precautionary measure, the ECB is reviewing the contingency procedures developed for the euro changeover in order to ensure their viability in the event of any problem arising from the Y2K changeover.

*Precautionary measures are also being implemented for the rollover period*

The ECB and the NCBs plan to complete all end-of-day and end-of-year activities, as well as the back-up of all systems and data, before midnight on 31 December 1999. In the event of problems arising from the century date change, operational needs could be met through a consolidated set of pre-2000 data. To

enable these operations and back-ups to take place before the end of the year, the ESCB has decided to close the TARGET system on 31 December 1999. The ESCB and ECB will also implement a moratorium on changes to IT systems of the Eurosystem between 1 October 1999 to 1 March 2000, in order to ensure compliance is not jeopardised by further changes.

*The successful multilateral testing of core EU banking systems has taken place…*

Testing has taken place in two phases. Individual components of the Eurosystem systems were tested for Y2K compliance in the first months of 1999. Internal ECB Y2K testing was completed at the end of May 1999. On 19 June 1999, following several months of intensive preparation, a successful bilateral Year 2000 test of ESCB-wide systems took place (European System of Central Banks). This activity, completed ahead of schedule, involved both technical and business areas of the ECB and national central banks (NCBs), and was designed to test the correct functioning of systems on 3 January 2000 and 29 February 2000. The TARGET system was not included in this particular testing activity.

*…and there is close monitoring of the major wholesale and retail payment systems*

The ESCB also closely monitors the progress of the major retail payment systems other than TARGET, in particular those settling their end-of-day balances in TARGET. It is considered that all major payment and securities settlement systems in the EU are making good progress with their Y2K preparations and are expected to continue to function smoothly during the changeover.

*An ESCB Y2K Co-ordination Committee is responsible for Y2K contingency planning activities at EU level*

The Governing Council of the ECB has established an ESCB Year 2000 Co-ordination Committee, consisting of Year 2000 co-ordinators from each NCB. The Committee is responsible for co-ordination among the ESCB institutions, and between the ESCB and international bodies dealing directly with Year 2000 issues. Its main tasks include analysing the suitability and feasibility of contingency measures and the procedures for activating such measures, as well as defining ESCB milestones to be monitored before, during, and after the transition.

During the rollover period, the ESCB Y2K Co-ordination Committee will form the core of an efficient communication infrastructure between the ECB and the NCBs, established specifically to monitor developments throughout the transition period. From the 31 December 1999 until the first working day in January 2000, and also around the leap year date, an “early warning” network will be in place to alert the decision-making bodies of the ECB. Should emergency situations arise, the Committee will be responsible for consulting the relevant business experts to expedite the decision-making process, ensuring that critical functions can be performed. It will regularly exchange information on global issues relevant to the Year 2000 transition, with particular reference to any major unexpected events concerning the ESCB internal systems and infrastructures, as well as the Eurosystem financial markets.

The ECB will participate in the Joint Year 2000 Council monitoring exercise at year end, and will exchange information with the Council as a contribution to mitigating Y2K-related risks beyond the Eurosystem at global level.

### 7.3 The TARGET system

*The TARGET system is the core settlement system for euro countries…*

The TARGET system is a settlement system, managed by the ECB, which interconnects national RTGS's (the real time gross settlement systems of Member States of the EMU). On a normal business day, TARGET processes an average of 175,000 transactions representing a value of more than EUR 1 trillion. This

includes 30,000 cross-border payments with an approximate value of EUR 350 billion. 200 net systems settle via national RTGS systems during each day.

*… hence any malfunctions risk creating severe problems*

Some of the transactions scheduled for 31/12/1999 will be shifted to 3/01/2000. In the event of failure of other euro settlement services, TARGET is likely to be used more intensively. Should TARGET not function smoothly on 3/01/2000, there is the possibility of liquidity imbalances occurring, with the risk of interest losses for banks and their customers, an impossibility to settle ancillary items with banks unable to close risk positions, and many transactions might have to be postponed to the next business day.

Bearing in mind that TARGET was implemented primarily to support monetary policy and reduce settlement risks, secure processing of core transactions (high value and settlement) should be given priority over the processing of a high number of payments. Responsibility for national processing is left to individual NCBs and the ECB, but cross-border processing will require common activities.

*Extensive testing of the TARGET system has occurred…*

TARGET testing takes place in a dedicated test environment similar to the live one. Tests are designed to establish the Y2K compliance of all hardware and software components used for TARGET, including the national RTGS systems and Interlinking components. After the NCBs and the ECB had completed their internal IT and business functionality testing of the TARGET system, they took part in multilateral business functionality tests. All the NCBs and the ECB have participated successfully in at least one of four multilateral testing rounds. A single Y2K error was found, related to the implementation of the receipt of end-of-day messages in some systems. All NCBs concerned were able to correct the software error immediately and re-test their systems.

A TARGET demonstration took place on 25 September 1999, in which all national RTGS systems, EBA settlement systems and hundreds of credit institutions participated. This final test has demonstrated the reliability of the overall TARGET system.

*…in conjunction with the mandatory testing of the SWIFT system…*

The S.W.I.F.T. Customer Test System (CTS) was used during the multilateral testing phase and for the TARGET demonstration. All NCBs and the credit institutions involved have communicated payment orders using the S.W.I.F.T. CTS, running with the relevant dates in 2000. S.W.I.F.T. has established a mandatory Y2K test programme in which all customers must participate. These tests were carried out by each NCB and the ECB, in parallel with the TARGET multilateral business functionality tests.

*…and of the corresponding central banking model*

Similarly, successful tests were carried out on the corresponding central banking model (CCBM). The CCBM is a system for mobilising collateral across borders in order to ensure the availability of collateral for monetary policy operations and for payment systems needs. The CCBM is based on multilateral agreements between the NCBs and the ECB. Since all messages flows are bilateral, Y2K compliance testing was carried out by pairs of institutions which utilise computer systems for this procedure.

Contingency procedures to process a limited number of system critical payments were established prior to the start-up of TARGET operations in January 1999. These procedures can cope with the unavailability of one or more NCBs and/or the ECB, and have been revised and enhanced for Y2K failure scenarios.

*Various contingency measures already exist to ensure normal TARGET operations will continue*

In August 1999, NCBs were requested to provide information on their domestic contingency planning for TARGET operations. Comprehensive answers were received from all NCBs in September. Links with the banking industry are in place. Contingency processing is based on existing domestic tools which are regularly tested. Priority will be given during the rollover period to major settlement systems that settle via TARGET. All NCBs have contingency modes in place and most are able to revert to "normal TARGET mode" in the course of a business day. They are prepared to make temporary use of correspondent accounts for Interlinking processing of certain "liquidity transfers cross-border", and to resume, once systems become available, normal TARGET operations.

Based on experience from testing contingency plans via the correspondent accounts (CoCA) which took place in July and September 1999, procedures and documentation are being revised. Further CoCA testing of contingency solutions using correspondent accounts with various service providers will take place in October and November 1999. The "normal" contingency processing, whereby Interlinking messages are sent manually from the CBT, will also be drilled before the end of the year.

To detect any remaining problems during the rollover as quickly as possible, NCBs and the ECB will carry out connectivity testing on 1 and, if necessary, also on 2 January 2000. Failure scenarios have been developed by the ECB and the ESCB to be able to offer quick alternatives to TARGET members.

### 7.4 Central banks and Y2K financial risks

*Liquidity issues are being given careful consideration…*

On 3.08.1999, the Bank of England announced that, in a bid to protect London's markets from Y2K-related problems, it would increase the pool of securities it will accept from banks as collateral by about 2 trillion pounds ($3.23 trillion), representing a significant sevenfold increase.

The Eurosystem announced in August 1999 that it does not see a need to introduce any systemic changes to its existing operational framework for the Y2K changeover. From the outset, this framework has been designed to provide maximum flexibility in the implementation of monetary policy, thus allowing appropriate technical adaptations. In particular, the framework has a built-in mechanism to accommodate any level of liquidity demand from market participants. The aggregate reserve requirement of the euro area banking system amounted to about EUR 100 billion in the first half of 1999, which provides a considerable buffer to cover exceptional liquidity needs at the turn of the year.

*…and a wide range of collateral and fine-tuning instruments exist in the EU*

The ECB also believes that the diversified payment systems infrastructure in the EU reduces the risk of systemic problems. Moreover, the approximately EUR 5,700 billion assets in the list of collateral eligible for the refinancing operations of the Eurosystem and the Correspondent Central Banking Model (which allows the cross-border use of collateral) is considered to be sufficient eligible assets as collateral even in exceptional circumstances. Additionally, a number of fine-tuning instruments complement the main, longer-term refinancing operations of the Eurosystem (outright purchases or sales, collection of fixed-term deposits and foreign exchange swaps).

The Eurosystem's facilities (marginal lending facility and deposit facility) offer credit institutions of the EMU an automatic means of dealing with any potential fluctuation in the demand of liquidity, and thereby limit any impact on short-term interest rates. Finally, the ECB announced on 23 September 1999, that no new

large refinancing operation will be initiated in the first week of 2000. This decision will help to minimise potential problems for counterparties and for financial markets which could result from the processing and settlement of such a large operation directly following the changeover.

### 7.5 Payment systems

*Retail payment systems in the EU are prepared and can use each other as back-up*

In Europe, the retail payment systems (payment systems operators, their member banks and retailers) are generally considered to be ready. The few remaining problems are known and being addressed, to allow electronic payments in particular to function normally. Operator networks are Y2K compliant and are co-operating together to exchange information. They will be able to rely on each other's facilities in the event of disruptions to systems or communication networks (Visa on Europay and vice versa, satellite communication instead of normal networks).

EU bank members of the retail payment systems are now 98 % ready, and the remaining banks are in the process of completing their remediation and contingency planning activities. In most EU countries, merchants have tested alternate techniques for payment authorisations in the event that telecommunications or connections to payment networks are temporarily unavailable. Manual solutions already exist in the trade and distribution sector.

### 7.6 Retail and wholesale liquidities and related infrastructures

*Additional volumes of cash and distribution mechanisms should prevent many problems,…*

The end of the year is traditionally a busy period with a higher than usual demand for cash, in this respect the end of 1999 is no different. The ECB, which analysed the problem within the ESCB Y2K Co-ordination Committee, does not see any need for individuals to hold higher amounts of banknotes during the transition period than they would normally do at year end. Nonetheless, NCBs have worked with commercial banks to ensure an additional volume of cash and organise its distribution. Due to the need to produce euro banknotes for the end of 2001, NCBs had already decided, independently of the Y2K context, to built up excess stocks of national banknotes to cover a long-term period, up to 2002, and free capacity for the production of euro banknotes.

NCBs have also worked together under the authority of the ECB to define contingency plans in this area. NCBs are able in some instances to easily double the volume of cash available (as is the case in Germany). Commercial banks have worked with technology providers to convert their ATM terminals. The testing of EU ATM networks is expected to be completed during Q3 1999.

*… nevertheless, communication with the public will remain particularly important for this sector*

Communication with customers will be a key strategy to cope with Y2K-related liquidity issues. Information will be provided to bank customers to reassure them of the compliance of ATMs, and to confirm that normal use can be made of cheques and plastic cards for payments. Tensions on the liquidity market are only likely to arise if there are concerns that Y2K might create disruptions with an economic impact, thus the primary task of private and public authorities must be to maintain public confidence. In the event of problems occurring, second level event management preparations will ensure that contingency measures are in place to cope, such as Central Bank mechanisms to recycle liquidity, extend collateral, and implement Lombard facilities.

### 7.7 EU banks and credit policy

*Banks are giving careful consideration to their customer credit policy,…*

Concerning credit management, Global 2000 has suggested that banks should avoid taking hasty, unilateral decisions to withdraw or reduce the credit lines of their business clients before 2000. Instead, they should carefully assess the Y2K readiness of their clients, hold direct discussions where they have doubts, and provide advance warning of any intention to take a negative decision.

*…with the majority deciding that well managed clients should continue to be supported*

The EU banks have given careful consideration to both the immediate short term, as well as the medium to longer term, requirements of their credit policies. In Finland, a highly automated financial sector has enabled banks to investigate the preparedness of their corporate, as well as their small and medium size business clients. They have concluded that there is a possibility that many corporations could experience difficulties after the rollover. Nevertheless, they expect that very few businesses will be harshly affected, the vast majority being well prepared for Y2K. The Finnish banking community believes that if, in a small minority of cases, corporate clients find themselves with longer term difficulties due to Y2K, the bank itself would also be placed in a sensitive situation, and would normally be obliged to provide further credit facilities.

The view of British bankers, a perspective shared by the majority of EU banks, is that Y2K does not have a significant impact on their solvency assessments of corporate clients. If clients are affected by Y2K but are nonetheless well-managed organisations, banks will continue to support them by providing extra-credit facilities. Y2K will not be a reason in itself to cancel credit lines.

### 7.8 EU Stock Exchanges

*EU stock exchanges announced the readiness of their sector in September,…*

The Federation of European Stock Exchanges, which includes stock exchanges within the EU and EFTA area, as well certain exchanges in Central European countries, issued a statement on their Y2K readiness on 27 September 1999. The assessment of Member Exchanges is that they are ready for the millennium changeover, and is based upon several key considerations.

*… based upon the widespread use of compliant modern system and extensive testing*

In general, these Exchanges are modern, high-tech enterprises, which have only recently introduced their electronic trading systems in the past few years, hence the inherent Y2K risk is considered to be low. Extensive testing has taken place, both internally and externally, and regulators and supervisors have made participation in Exchange tests a mandatory requirement in many countries. They feel that they have gained valuable experience from the Euro changeover. Many members have ultimate lock-out options to be used in the event that their systems are endangered by unprepared business partners.

### 7.9 The EU insurance industry

*The common position of EU insurers is to cover damages for their customers who have exercised diligence*

EU insurers have agreed a common position through CEA (the European Committee of Insurers), that only residual Y2K risks can be covered. If an insured company has taken all the necessary measures to adapt and protect its systems against Y2K-related risks, then associated damages can be covered under the terms of their contracts. National federations and individual companies have made special efforts to inform their customers, especially corporations and SMEs, about Y2K risks and how they should be dealt with. In several countries, however, millennium risks are being excluded from most policies at renewal.

*However, the activities of the markets in each country vary widely throughout the EU, with some providing guidance, …*

In spite of this common position, the instruments created by the markets vary substantially between EU countries. Some Federations have recommended exclusion clauses to their members, although individual companies are free to decide on their own particular strategies. No specific collective measures have been taken in Greece or the Nordic countries. In Portugal and Switzerland, Federations have limited their involvement to delivering recommendations and advice to their members. For others, Federations are also providing common legal and technical support to help members to minimise potential financial losses due to Y2K (Ireland, Spain, Germany, and the Netherlands).

*…others instituting shared emergency funds, …*

The In the Netherlands, a central emergency fund (500 million Euro) has been created to cover special risks where policy holders can prove due diligence in solving the Y2K problem. Organisations not participating in this fund need to generate similar reserves for this purpose.

*… and yet others establishing structures to monitor and assist in the assessment of claims*

In France and Belgium, Federations have created collective permanent structures for the monitoring of Y2K claims and their resolution. In France, the technical platform "Co-ordination An 2000" has four key tasks. It provides technical assistance, expertise support, legal co-ordination, and maintains a database of information on Y2K claims. The Belgian technical platform offers assistance for on-site assessment expertise to help insurance companies assess Y2K-related claims and fight against potential fraud. Such organisations create a positive synergy between professionals, saving time and sharing experience.

### 7.10 The macro-economic impact of Y2K

*Some countries are already examining the macro-economic impacts of Y2K…*

As the critical period approaches, countries are considering how to assess the potential short- and long-term macro-economic impact of Y2K. In the Netherlands, preliminary investigations on the longer term aspects have been carried out, and further evaluations are foreseen.

During 1998 and 1999, several studies on this topic were performed. The study by ING-Barings Bank in 1998 was cited by the OECD in its report on the Y2K problem, and a similar action was undertaken by the CPB in 1999 (the Central Planning Bureau is responsible for economic forecasting in the Netherlands). Both predicted a minor impact, taking into account the overall activities in the Netherlands, the possible macro-economic scenarios, as well as studies of similar disruptions to production in certain industries and regions. The ING-Barings report indicated variations between industries determined by the type of industry, IT-dependencies, cross-border effects, etc.

The Dutch National Bank recently published a progress report on the Y2K-problem in the banking industry in the Netherlands. A section of the report concerns the credit-ratings of bank customers and the legal requirements for banks to adjust their reserves in accordance with perceived risks. It concludes that only limited adjustments are necessary.

In 2000, the macro-economic impact of the Y2K-problem will be evaluated by the CPB, as well as the Dutch National Bank, as part of their regular activities.

*…and intend to collect information on Y2K failures*

As part of their ongoing monitoring, contingency planning, and crisis management operations, the sectoral millennium platforms, the Government Y2K Project Office, and the National Crisis Co-ordination Centre will collect information on Y2K-related problems during a period from 1 October 1999 until the end of March 2000. This information will be used to estimate the macro-economic impact of the Y2K problem, as part of the overall evaluation of the Y2K efforts in the Netherlands. The collection of information on actual Y2K and

non-Y2K related failures is an integral component of their contingency planning efforts.

*The ECB has analysed the short term macro-economic impact and identified certain effects*

The ECB has already analysed the short-term macro-economic impact of Y2K and found sectoral effects created by the diversion of resources to Y2K actions. In the short-term, this could induce some hoarding of products by firms, stocks of food and other consumer goods by households, as well as the diversion of fixed investment. These factors could have a monetary impact in the form of a temporary increase in bank lending. The interest rate implied in the three-month EURIBOR futures contract has traded above the notional interest rate. This Y2K "spike" tended to grow over the summer, but has recently diminished.

However, the Y2K impact on short-term interest rates is significantly lower for secured transactions protected by collateral. The yield curve for collateralised instruments thus shows a far more regular pattern than the curve of interest rates applied to unsecured transactions. This reflects a heightened awareness of the credit risk considerations around the turn of the year.

### 7.11 International preparations

*Global 2000 has developed key recommendations for the financial sector…*

A meeting of Global 2000, the international organisation created by the financial services industry (banking, insurance, investment firms and payment systems operators) took place in Vienna in September 1999. The purpose was to review how 11 recommendations adopted by Global 2000 members at their July meeting in Miami could be implemented in Europe. Three major areas were considered - liquidity management, credit management and event management.

Markets in the EU are in the process of finalising their country-based Action Plans. On this occasion, delegations took advantage of the recommendations provided by Global 2000 to review and make known to other banking communities those actions which were complete, and to establish a schedule for the remaining actions to be carried out. This exchange of detailed exchange of information is reserved for Global 2000 members.

*…and will establish a communication network*

The Global 2000 will organise a restricted communication network during the rollover period. Deutsche Bank has taken the initiative to organise this network in a similar manner to the network of the Joint Year 2000 Council. Ten EU countries will be part of this Global 2000 network, seven of which are also included in the network of Joint Y2K Council financial centres.

*The IAIS has surveyed the preparations of insurance societies*

The International Association of Insurance Societies (IAIS), sent a questionnaire to all members in July 1999. 67 members replied, including the insurance markets of 13 EU countries, with only Greece and Luxembourg not answering. Although the IAIS published general results, the responses of EU supervisors are amongst the most positive. Nearly all IAIS members collect or maintain information on the Y2K readiness of companies within their jurisdiction. Most members were able to provide information on the percentage of companies which had successfully performed tests on their core systems, nearly half indicating that 90% of their supervised companies had done so, including some major insurance markets. The number of insurance companies having made Y2K contingency plans was slightly less.

## 8 WATER

*Although the water sector is later in starting and finishing than others,…*

In general, the preparations of the water industry were late in starting. Of the various industries covered in this document, the EU water industry is the most frequently reported with target completion dates in the fourth quarter. The production and distribution of water can be handled manually without the support of IT-based control systems. Many plants are designed in such a way that the supply of the network and the maintenance of supply pressure can be made via storage tanks under using the natural downward gradient without pumping. In others the geographical situation is relevant. For instance, in Austria, mountains are the source of much of the water supply. The difference in altitude between source and water tap means that pumps and electronic systems are seldom needed, and the natural quality of the water is high, reducing the need for complex processing. Thus, possible problems are likely to be limited to recording mistakes, which may result in wrong billings.

Contingency planning in the water industry is similar to other infrastructure sectors. Reservoirs will be full. There will be increased staffing and additional training provided to personnel to carry out manual operations if necessary. Emergency power supplies will be used as a back-up in the event of a loss of energy supply.

*…the risks seem to be lower and contingency plans are being implemented,…*

In Greece, there are plans to have personnel equipped with various telecommunication equipment, located at critical nodes of the water supply network and prepared to take quick and effective action. In the Netherlands, district water boards will decrease water levels by pumping more than the usual amount of water before the millennium shift, thus the consequences for the general public will be limited in the event of pump station failure due to possible power outages.

*…with relevant national legislation ensuring that companies are prepared at all times*

The National regulations frequently exist for the water industry. By law, all water companies in the UK are required to provide 10 litres of drinking water per head per day for the duration of any disruption. In the Netherlands, the water supply sector has a strict contingency regimen which requires 10 days of full operation without new supplies of energy and chemicals (based on their own back-up sources of power, and 20 - 25 days supply of fresh water without new intake of water from known sources (mainly rivers).

*However, it remains difficult to obtain an overview of the situation*

Many countries reported that water supply and waste water management was one of the most difficult sectors from which to obtain information. This difficulty is primarily associated with the large number of small, localised companies which provide these services, usually thousands in each country, generally under the responsibility of local councils or regional authorities.

## 9 COMMISSION ACTIVITIES

### 9.1 Internal Situation:- see also : http://europa.eu.int/comm/y2k/preparation/y2k_en.htm

*Commission initiatives continue...*

The Commission continues to actively pursue the initiatives announced in its Communication COM1998(102).

*...with priority given to internal systems...*

Top priority is being given to making its own systems and products compliant. Regular meetings involving the Secretary General and Directors General keep

progress under review through the Co-ordination Group on Organisation and Management.

*...and work is expected to be completed in time*

Since 1996, all DGs have been asked to include in their annual information plan a specific plan to adapt their information systems to the year 2000, with priority given in the budget allocations to executing these plans. Approximately 75% of the Commission's strategically important information systems are already compliant or are being replaced by compliant systems, the remaining 25% are in the final phase of adaptation. Particular emphasis has been placed on contingency planning and product and contract auditing.

*End-to-end testing of systems linked to external bodies has been conducted*

The verification of the underlying infrastructure (hardware, system software, third party software) is well advanced and compliance will be achieved in time. After the internal tests carried out successfully in the first half of 1999, additional tests have been performed over the summer period for information systems linked to external bodies in the areas of finance, customs and agriculture.

*Particular emphasis has been placed on contracts for goods and services with external suppliers, and those supplied by the Commission itself*

An inter-service group, led by the Secretariat General and with representatives from all DGs, oversees the ongoing year 2000 activities within the Commission. Its tasks cover mainly non-informatics subjects, such as the co-ordination of contingency plans for assuring the continuity of essential services, legal issues (Y2K effects oncontracts, warranties, obligations), general infrastructure aspects (including buildings, security systems, lifts, and all related supplies) and information campaigns targeted at Commission staff and the public. A special effort has taken place over 1999 to assess whether data or products supplied by outside firms or provided by the Commission are compliant, in order to keep any adverse effects to the minimum, and to audit the accompanying contracts.

As regards other European institutions, the inter-institutional committee for informatics (CII) continues to co-ordinate year 2000 activities so as to ensure a common approach to the problem. The Commission has also organised in July a symposium with Member States and SMEs on the adaptation of European information systems to the year 2000 and the Euro.

### 9.2 External Activities:- see also http://europa.eu.int/geninfo/keyissues/y2k/index_en.htm

*Another workshop examined the progress of cross-border and cross-sector issues in critical infrastructure sectors in the EU, and elsewhere*

Following up on the success of the previous EU Infrastructure Providers Workshop which took place in April 1999, the Commission hosted a second meeting of European infrastructure providers to discuss cross-border and cross-sector dependencies relating to the Y2K problem. This meeting took place on 29-30 September 1999, where more than 200 participants, including national Y2K co-ordinators, regulators, and representatives of both international associations and industry from more than 35 countries, met together.

The key sectors which were examined included finance, transport - aviation, maritime, and rail, energy – electricity and gas, telecommunications, and nuclear safety. Also discussed were aspects such as the continuity of supply chains, strategies for communication with the public, and the preparations of national emergency services. The results are summarised on the Commission's Y2K website.

*Collaboration on emergency planning issues and crisis management is also taking place*

The Commission has hosted several meetings with the Member State authorities responsible for civil protection to discuss the Y2K problem and their plans. Discussions have also taken place with certain sectors of private industry which have potential safety concerns, such as the chemical and nuclear industries. The Millennium celebrations at the end of 1999 are expected to be more numerous

and larger than usual, therefore, the fire and rescue brigades and emergency services are preparing by increasing their capacity to respond.

*Existing contingency plans and resources are being reinforced and exercised in both the public…*

All levels of responsibility from local municipalities up to central government are involved in ensuring the continuous and safe functioning of the economy and society, with local authorities being at the forefront in critical situations. The system is based on the use of existing contingency plans to cope with various hazards. These plans being reviewed in order to take into account possible additional complications resulting from Y2K, repeated exercises are being conducted, responsibilities have been clarified, priorities have been set for the use of available resources, and IT systems carefully checked for compliance.

Countries such as the Netherlands have developed a reference scenario describing possible disruptions in vital sectors and to public order and safety. This has been used to train people to co-ordinate their actions by carrying out similar activities simultaneously. A model contingency plan for the fire services was also based on the reference scenario, and will be used by all regional/local fire services to develop their individual contingency plans for Y2K-related events. A series of national and regional exercises took place at the beginning of September. Although there were no problems experienced with the technical systems tested, technical problems occurred with the emergency phone service, and several problems were identified in emergency plans. These problems will be fixed and further exercises will take place.

For Italy, a comprehensive national contingency plan for the rollover is being developed which involves all levels of the emergency services, the appropriate ministries and regional administrations, the national Y2K platform, and local infrastructures, to provide a co-ordinated response in the event of an incident. This plan also covers public communication.

*…and private sectors*

Typically, the chemical industry does not regard Y2K problem as an exceptional event, since this industry must be prepared for critical situations at all times. Nevertheless, companies are also conducting drills of their contingency plans with a special emphasis on Y2K aspects. Although major problems are not being detected, the need to co-ordinate emergency plans with local and community services has been highlighted. Critical factors are the functioning of telecommunications, electricity and heating, as well as water supply. It should be anticipated that fire alarms may malfunction.

Although the implementation of contingency and emergency planning is not a responsibility of the Commission, discussions have indicated that there is a strong need to clarify responsibilities at different levels within the Member States, as well as in the different infrastructure sectors.

## 10 CONCLUSIONS

*Organisations in various sectors in the EU expect "Business as usual"*

The overall picture in the EU now appears to be one of general readiness, with many companies anticipating "business as usual", particularly the larger organisations. A key success factor in reaching this situation has been the avoidance of reinventing the wheel and creating new organisations or programmes for Y2K, instead, organisations have based their preparations on existing expertise, mechanisms, and resources.

*Much of this has been accomplished by competitors working together*

Furthermore, industry has indicated that the Y2K problem has brought about an unprecedented level of collaboration and co-operation between competitors and sectors. Companies have recognised that they are all in this together, and that a significant drop in confidence in a single organisation risks harming the position of the sector as a whole. At the same time, some companies have become so confident of their individual readiness that they are looking for opportunities to take advantage of a lack of preparation by competitors in order to gain new customers.

*Nevertheless,…*

Nevertheless, important issues remain to be addressed prior to year end.

*…issues such as ensuring the overall continuity of supply chains,…*

Given the enormous number of interdependencies present in current supply chains, it is possible that there may be interruptions to the flow of goods and services. A key matter of concern is the status of national customs systems, where a lack of compliance could provoke disruptions throughout supply chains, over which industry would have little control. Logistics now appears to be somewhat less of an issue than was previously considered. The continued availability of large stocks being held throughout supply chains in the EU has surprised many who thought these operations had been revolutionised by the advent of just-in-time manufacturing.

The verification of external supplier compliance remains an important, if also a complex and time-consuming, task. For practical considerations, organisations with numerous suppliers are obliged to conduct their assessment of vendor readiness via questionnaires. Only a few are in a position to carry out on-site inspections, and this action tends to be reserved for their most critical suppliers. It is often more cost effective to focus on ensuring that there are effective business continuity plans, including substitute suppliers, in place.

*…conducting thorough drills of continuity and contingency plans and training staff,…*

A vital step in continuity planning is the thorough testing of these plans in advance, often by simulating a worst case scenario such as the loss of telecommunications and power. Invariably, those organisations that have exercised their plans have discovered various omissions and complications which might have affected their ability to operate effectively in critical circumstances, with many going on to schedule additional tests.

An additional critical link in supply chains is the business customer. In several of the areas most concerned, such as banking, insurance, and electricity, the behaviour or preparedness of these customers are also important considerations, although in no way does this alter the legal and other responsibilities of service providers with regard to their responsibility to ensure quality, continuity and reliability of services provided over the period. Communication with business customers and the provision of information to the residential customer remains a key component of the Y2K strategies of these companies. In general, firms in the EU have adopted a practical approach, assuming that those customers which are well managed under normal circumstances are unlikely to be significantly affected by the millennium bug.

*…, and finalising preparations for the rollover period itself, still remain to be addressed*

Another issue is the actual timeframe of events. During the fourth quarter of 1999, organisations will finalise their contingency preparations, with many deciding to implement internal "crisis cells" or "command centres", also becoming members of networks to share information on incidents which may arise. Indeed, for certain organisations, their ability to detect and respond to any disruptions which occur at the end of this year will be greater than ever before.

*Organisations will need to remain on alert throughout 2000*

Even so, the focus of these efforts is frequently on the immediate rollover period of 31 December 1999 and 1 January 2000. For some industries, normal operations and peak loads will occur on the first working day. Furthermore, it is possible, even likely, that the full impact of problems could require days, weeks or even months to become apparent. It is likely that many firms will retain a certain level of monitoring and capacity to react throughout next year.

*Problems associated with IT systems are already manifesting themselves…*

As expected with the year end approaching, organisations world-wide are already experiencing problems associated with IT systems. Such incidents have tended to receive considerable media attention. Although some problems may be directly attributable to the Y2K problem itself, in other cases, they are only indirectly associated, if at all. Newly installed compliant replacement software will invariably contain bugs, incompatibilities between altered systems may manifest themselves, the testing process for Y2K compliance or of contingency plans may trigger existing bugs which had previously gone unnoticed, and users unfamiliar with new or modified systems may generate errors.

*…and it will be come increasingly important to be able to distinguish between Y2K events and unassociated incidents*

These are all general problems associated with the implementation of IT systems, which will occur frequently during the run-up to the new millennium, and which thus far have proved little more than an embarrassing nuisance. In normal circumstances, a substantial proportion of the problems reported to software support centres are actually the result of mistakes made by users, or the software working as intended. The volume of such incidents at the beginning of 2000 will be a problem in itself, with inaccurate reports of errors wasting valuable resources needed to resolve genuine problems, and potentially leading to unjustified concerns on the part of both the public and the media.

### 10.1 Public Confidence

*Y2K has now evolved into an issue of public confidence…*

It is clear that the issue which represents the greatest challenge in the EU, as elsewhere, is that of public confidence. In terms of public relations, Y2K is unique in several respects. It is global in nature and has the potential to affect everyone to some extent, it is not possible to provide or receive absolute guarantees of continuity of service, and, the ultimate impact is unpredictable.

*…and EU governments are not being complacent regarding the current low level of public concern*

Whilst public awareness throughout the EU has continued to increase throughout 1999, the Y2K problem has thus far attracted less media attention in the EU than in the US, and public concern is also generally at a lower level. Nevertheless, governments are stepping up their efforts in order to ensure that the current level of trust is retained throughout the short time remaining. Careful consideration is being given to achieve a balance between keeping the public well informed and providing unnecessary or inappropriate information which might lead to confusion rather than understanding.

*A number of initiatives to put information into the public domain are ongoing…*

Many governments have already sent, or are planning to issue soon, leaflets to householders providing accurate information on commonly asked questions. Some have implemented distinct communication units within their national millennium platforms. September 1999 has seen the publication by several government Foreign offices (the US, Canada, Australia, New Zealand and the United Kingdom), of information to their citizens regarding third country readiness. In general, these assessments were based upon factual information obtained from country authorities, without subjective assessment.

*…and there are preparations to ensure that the public will remain well informed during the rollover itself*

All EU governments plan to put in place "national communication cells" at year end, which will monitor and receive information on the national and global situation, thus creating a mechanism to provide accurate and timely information to their citizens, as well as other countries. Each country plans to ensure that a reliable information source will be available to effectively respond to possible incorrect or misleading stories which may arise. It is essential to have authoritative information to distinguish between genuine Y2K-related incidents and coincidental problems which may occur during the critical period.

It has already become important for organisations such as those in the transport sector, which are beginning to announce their scheduling decisions for the year end period, to be very careful to indicate where these decisions are being taken in anticipation of low demand, rather than in expectation of problems.

It remains a concern that whilst private industry is collecting reliable information on the readiness of their own sectors, in some instances the results are not being given to governments or to the public, since they can only be obtained under conditions of confidentiality.

*Public opinion on Y2K is now likely to be formed, and may lead to apathy by those who still need to act*

People are likely to have reached a stage where they have formulated a particular view on Y2K, and it may now require a significant effort to change their opinion. This generally bodes well for ensuring that the level of public confidence in the EU remains high. However, it may also mean that there is less interest in continuing to attack the problem on the part of individuals or companies, especially SMEs, who have decided that Y2K is a small problem that has been overemphasised, or that it will be such an enormous problem that there is little that can still be done to mitigate it.

*A sustained, co-ordinated effort will be required by all parties to ensure that fear of the unknown does not become a problem in itself*

An effective communication strategy is central to managing public confidence in the final quarter of this year. Everyone has their own individual part to play. Companies should focus on their investors and customers. Industry sectors should address general market confidence, as well as their regulators. Ultimately, it is at national level where governments must concentrate on understanding and managing public confidence and expectations. A successful strategy requires a sustained continuous effort from these organisations working together. Events and the media must be closely monitored to identify problems which might trigger concerns, and all must be prepared to deal with incidents which may arise at any time without notice by providing factual, yet simple, information from reliable spokespersons.

# 11 ANNEX

The following is a list of websites from which additional information can be obtained.

These websites are not under the control of the services of the European Commission and the Commission is not responsible for the material contained therein.

**National and government information:**

| | |
|---|---|
| Austria | http://www.austria.gv.at/ (government) |
| | http://www.wifi.at/tub/2000/ (WIFI / Beratungsdienste) |
| Belgium | http://y2000.fgov.be/ (government) |
| Denmark | http://www.2000parat.dk (national site) |
| | http://www.fsk.dk/fsk/div/aar-2000/year2000.html (Research and Information Technology) |
| Finland | http://www.vn.fi/vm/kehittaminen/tietohallinto/hko33.htm (Finance) |
| | http://www.kuntaliitto.fi/tietot/ (Regional) |
| | http://www.tt.fi/yrityspalvelu/vuosi2000/ (Confederation of Finnish Industry and Employers) |
| France | http://www.premier.ministre.gouv.fr (Prime Minister) |
| | http://www.an2000.gouv.fr (government) |
| | http://www.industrie.gouv.fr/site/industrie/home/navi/page/industrie (industry) |
| | http://www.justice.gouv.fr/publicat/an2000.htm (justice) |
| | http://www.defense.gouv.fr/sdsic/a2000/index.html (defence) |
| | http://www.equipement.gouv.fr/an2000/1000.htm (transport/logistics) |
| | http://www.education.gouv.fr/actu/an2000/plan.htm (education) |
| | http://www.diplomatie.fr/actual/dossier/an2000.html (foreign affairs) |
| | http://www.interieur.gouv.fr/an2000 (interior) |
| | http://www.agriculture.gouv.fr/index.html (agriculture) |
| | http://www.jeunesse-sports.gouv.fr/francais/misan2000/index.htm (youth/sports) |
| | http://www.santé.gouv.fr/htm/pointsur/an2000/index.htm (health) |
| Germany | http://www.info-jahr-2000.de/ (national site) |

| | |
|---|---|
| | http://www.iid.de/jahr2000/ |
| | http://www.kbst.bund.de/j2k/ (Koordinierungs- und Beratungsstelle der Bundesregierung für Informationstechnik in der Bundesverwaltung - KBSt) |
| | http://bmwi.gmd.de/y2k/ (The Y2K Problem in Information Technology - Progress Report by the Federal Government) |
| Greece | http://www.year2000.gr |
| Iceland | http://2000.stjr.is/ensk/index.html (national site) |
| Ireland | http://www.forbairt.ie/y2k/ (Department of Trade and Enterprise) |
| | http://www.irlgov.ie/ (government) |
| | http://www.irlgov.ie/finance/y2k2.htm (Finance) |
| | http://www.2000aware.ie/ (industry) |
| Italy | http://www.comitatoanno2000.it/ (prime minister) |
| | http://www.aipa.it/attivita[2/anno2000[12/ (public administrations) |
| Luxembourg | http://www.crpht.lu/an2000 |
| Netherlands | http://www.mp2000.nl/ (national site) |
| | http://www.pmo.nl/pmo/ (government) |
| | http://www.minbzk.nl (civil protection) |
| | http://www.nibra.nl/pmb (fire services) |
| Norway | http://www.aksjon2000.org/ (national site) |
| | http://odin.dep.no/aad/publ/aar2000/index.html (Arbeids –og administrasjons-departemented – AAD) |
| Portugal | http://www.missao-si.mct.pt/P2000/index1.html (national site) |
| | http://www.iapmei.pt/idex/informacao/ano2000.html (SMEs) |
| | http://www.inst-informatica.pt/ANO2MIL/2mil001.htm |
| | http://www.min-plan.pt/menu/tforce/index.html |
| Spain | http://www.map.es/csi/2000.htm |
| | http://www.sgc.mfom.es/efecto/efecto.htm |
| | http://www.ipyme.org/temas/inforeu/interme.htm |
| | http://www.euro.meh.es/mnoticias.htm |
| | http://www.mma.es/2000.htm |
| | http://www.cnmv.es/A2000/efecto2000.htm |
| | http://www.consumo-inc.es/e2000/ |
| | http://www.msc.es/insalud/milenio/home_efecto2000.htm |
| Sweden | http://www.statskontoret.se/2000/sfs.htm |

| | |
|---|---|
| | http://www.2000-delegationen.gov.se/aktuellt/index_1.html (national site) |
| Switzerland | http://www.millennium.ch (national site) |
| | http://www.efd.admin.ch/aktuell/2000/index.htm (public administrations) |
| UK | http://www.open.gov.uk/year2000 (UK plans/preparedness) |
| | http://www.bug2000.co.uk (UK infrastructures – the results of all assessments are provided on this website) |
| | http://www.citu.gov.uk/y2000.htm (Year 2000 Team & Year 2000 Media Co-ordination unit) |

**For the energy sector:**

| | |
|---|---|
| Austria | http://www.evn.at (electricity) |
| | http://www.fernwaerme.co.at (district heating) |
| | http://www.omv.at (oil/gas) |
| | http://www.safe.at (electricity) |
| | http://www.verbund.at (electricity) |
| | http://www.veoe.at |
| | http://www.wiengas.co.at (gas) |
| | http://www.wienstrom.co.at (electricity) |
| Finland | http://www.finergy.fi |
| | http://www.fingrid.com |
| | http://www.neste.fi/konserni/2000/index.html |
| | http://www.gasum.fi/frindex_eng.htm |
| | http://www.energia.fi/finergy/ |
| France | http://www.edf.fr (electricity) |
| | http://www.gdf.fr (gas) |
| Greece | http://www.dei.gr/dei-en.htm |
| | http://www.depa.gr/eng.index.html |
| | http://www.dep.gr |
| Ireland | http://www2.esb.ie/htm/home/index.htm (electricity) |
| | http://www.irlgov.ie/tec/energy/inpc.htm (oil) |
| | www.bge.ie/htm/y2k/y2k.htm (gas) |
| Italy | http://www.enel.it (electricity) |
| | http://www.eni.it (oil and gas) |
| Luxembourg | http://www.cegedel.lu |
| Netherlands | http://www.energie2000.nl |

| | |
|---|---|
| | http://www.emp.nl |
| Norway | http://www.enfo.no/index.cfm |
| | http://www.statnett.no/y2k/index.html |
| | http://www.npd.no/y2k/ |
| Spain | http://www.endesa.es/2000/index.htm (electricity) |
| | http://www.repsol.es/webrepsol/esp/inversor/efecto2000.htm (oil and gas) |
| | http://www.miner.es |
| | http://www.min.es/Informacion_anexa/14061999.htm |
| | http://www.ree.es/indi2000.htm (electricity) |
| Sweden | http://el2000.com/index.html |
| | http://www.stem.se/om_myndigheten/y2k.html |
| Switzerland | http:// www.strom.ch (electricity) |
| | http://www.erdgas.ch (gas) |

**For the transport sector in general**

| | |
|---|---|
| Spain | http://www.mfom.es |

**For the aviation sector:**

| | |
|---|---|
| International | http://www.icao.int/y2k/ (International Civil Aviation Organisation – ICAO) |
| Austria | http://www.aua.at (Austrian Airlines) |
| | http://www.austrocontrol.at (air traffic control) |
| | http://www.flughafen-wien.at (Vienna Airport) |
| | http://www.laudaair.com |
| Belgium | http://www.sabena.com/public/about/y2k.asp |
| Finland | http://www.ilmailulaitos.com/english/ (Civil Aviation Authority) |
| Germany | http://www.dfs.de/jahr2000 |
| | http://www.dfs.de/Y2K |
| Greece | http://www.olympic-airways.gr |
| Italy | http://www.rai-enac.it/Y2K/indice.htm |
| Netherlands | http://www.minvenw.nl/millennium (RLD) |
| Sweden | http://www.lfv.se/sakerhet/y2k/y2krs03.pdf |
| Switzerland | http://www.atraxis.com |
| UK | http://infrastructure.bug2000.co.uk/sectors/air/ |

**For the maritime sector:**

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|---|---|
| International | http://www.ship2000.com (joint web site of the International Chamber of Shipping (ICS), the United Kingdom P&I Club and Lloyd's Register) |
| Germany | http://www.ism-center.de |
| Greece | http://www.yen.gr |
| Italy | http://www.trasportinavigazione.it/ |
| Netherlands | http://www.minvenw.nl |
| | http://www.mpt.nl |
| Norway | http://www.rederi.no/no/bibliotek/y2k/ |
| Sweden | http://www.sjofartsverket.se/frameset.htm |
| UK | http://infrastructure.bug2000.co.uk/sectors/shipping |
| | http:// www.mcagency.org.uk |

**For the rail sector:**

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|---|---|
| Austria | http://www.oebb.at |
| Finland | http://www.rhk.fi/defeng.htm (Finnish Rail Administration) |
| | http://www.vr.fi (Finnish State Railways) |
| France | http:// www.sncf.fr |
| | http://www.ratp.fr |
| Greece | http://www.ose.gr |
| Ireland | http://www.cie.ie/html/news/media/y2k.html |
| | http://www.irishrail.ie |
| Italy | http://www.fs-on-line.com/eng/index.htm |
| Netherlands | http://www.ns.nl |
| | http://www.mpt.nl |
| Sweden | http://www.banverket.se/framtiden/ar2000.htm |
| Switzerland | http://www.sbb.ch |
| UK | http://www.rail-reg.gov.uk/ |

**For the road sector:**

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|---|---|
| France | http://www.equipement.gouv.fr/an2000/1000.htm |
| Greece | http://www.oasa.gr (Athens Urban Transport Association) |
| Ireland | http:// www.buseireann.ie/html/corpinfo/y2k.html |

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| | http://www.dublinbus.ie/html/news/y2k.asp |
| Italy | http://www.autostrade.it/pagine_1/english/e-homep.html |
| Netherlands | http://www.mpt.nl |
| UK | http://infrastructure.bug2000.co.uk/ |

**For the telecommunication sector:**

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|---|---|
| International | http://www.itu.int/y2k (summaries of individual company responses to questionnaires can be found on this ITU web site) |
| Austria | http:// www.telekom.at (Telecommunication operator) |
| | http:// www.mobilkom.at (mobile telephony operator) |
| | http://www.maxmobil.at (mobile telephony operator) |
| | http://www.colt.at or http://www.colt-telecom.com |
| Belgium | http://www.belgacom.be/uk/about/operations/y2k/default.htm (Telecommunication operator) |
| | http://www.mobistar.be/fr/new/Y2K.html (mobile telephony operator) |
| Finland | http://www.sonera.fi/english/year2000.html (Sonera Oyj) |
| | http://www.hpy.fi/yritys/vuosi2000 (Finnet Group) |
| France | http://www.france.telecom.fr |
| Greece | http://www.ote.gr (Hellenic Telecommunications Organisation) |
| | http://www.cosmote.gr/e_mainpage1.htm |
| | http://www.panafon.gr/en |
| Ireland | http://www.telecom.ie/AboutTelecom/y2k.html |
| Italy | http://www.telecomitalia.it/index.uk.html |
| Luxembourg | http://www.y2k.lu |
| Netherlands | http://www.mp2000-telecommunicatie.nl |
| Norway | http://www.telenor.no/bedrift/ar2000 |
| Spain | http://www.sgc.mfom.es/efecto/efecto.htm |
| Sweden | http://www.pts.se/aktuellt/2000-rap.pdf |
| Switzerland | http://www.swisscom.com/2000ok |
| UK | http://www.oftel.gov.uk/bug2000.htm |

**For the Nuclear Power sector:**

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| International | http://www.iaea.org/worldatom/program/y2k/ (International Atomic Energy Agency) |
| Finland | http://www.stuk.fi |

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| France | http://www.edf.fr/html/fr/an_2000/index.html |
| Germany | http://www.grs.de |
| | http://www.bmwi-info2000.de |
| Netherlands | http://www.energie2000.nl |
| Sweden | http://www.ski.se/ |
| Switzerland | http:// www.hsk.psi.ch/aktuel.html |
| UK | http://www.snl.co.uk/cgi-bin/frame.pl5?loc=media/mn_factfiles_millenium.html (British Energy) |

**For the financial sector:**

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| International | http://www.bis.org/ongoing/index.htm (Joint Y2K Council) |
| | http://www.global2k.com/ (Global 2000) |
| | http://www.iosco.org/year2000.html (international organisation of securities supervisors) |
| | http://www.ecb.int/ (European Central Bank) |
| | http://www.iaisweb.org/ (international association of insurance supervisors) |
| | http://www.worldbank.org/y2k/ (World Bank) |
| Austria | http://www.oenb.at (Austrian Central Bank) |
| | http://www.oekb.co.at (Central Securities Depository) |
| | http://www.apss.co.at (APSS) |
| | http://www.bank.austria.com (Bank Austria Creditanstalt) |
| | http://www.bawag.com (BAWAG) |
| | http://generali.co.at (EA-Generali) |
| | http://www.erstebank.at (Erste Bank) |
| | http://www.raiffeisen-bank.at (RZB) |
| | http://www.visa-austria.com (Visa-Austria) |
| | http://www.staedtische.co.at (Wiener Staedtische) |
| | http://www.wbag.at/index_english.html > Service > Year2000 (Wiener Börse AG) |
| Belgium | http://www.nbb.be/sg/e/geninfo/p25e.htm (National bank) |
| | http://fortisbank.com/fben/index.asp |
| | http://www.kbc.be/kbc2000/en/index_en.html |
| | http://www.bxs.be/bxs_gb.html > Year 2000 (BXS Brussels Exchange) |
| Denmark | http://www.xcse.dk/uk/nyt/pressemeddelelser/90226uk.asp (Copenhagen Stock Exchange) |

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|---|---|
| Finland | http://www.bof.fi (Bank of Finland) |
| | http://www.rata.bof.fi/english/Faq/Faq.html (Finnish Supervisory Authority) |
| | http://www.hex.fi/y2k/index.html (Helsinki Stock Exchange) |
| | http://www.vakes.fi/svk (Federation of Finnish Insurance Companies) |
| | http://www.vn.fi/stm/suomi/vastuual/vast01fr.htm |
| France | http://www.afb.fr/pascfonb.htm |
| | http://www.paribas.com |
| | http://www.bourse-de-paris.fr/an2000/en/first/fs01.htm (Paris Bourse SBF SA**)** |
| Germany | http://www.bakred.de (Bundesaufsichtsamt für das Kreditwesen) |
| | http://www.bundesbank.de (Deutsche Bundesbank) |
| | http://www.bav-bund.de (Bundesaufsichtsamt für das Versicherungswesen) |
| | http://www.bawe.de (Bundesaufsichtsamt für den Wertpapierhandel) |
| | http://www.exchange.de/index.html > Year 2000 Project (Deutsche Börse AG ) |
| Greece | http://www.hba.gr |
| | http://www.ase.gr>Announcements>Year 2000 (Athens Stock Exchange) |
| Iceland | http://www.vi.is > English (Iceland Stock Exchange) |
| Ireland | http://www.ise.ie/senews/frcontent.htm (Irish Stock Exchange) |
| Italy | http://www.bancaditalia.it |
| | http://www.cipa.it |
| | http://techinfo.sia.it |
| | http://www.consob.it |
| | http:// www.borsaitalia.it/ing/Y2K/Y2Ken.html (Italian Stock Exchange) |
| | http://www.cedborsa.it |
| | http://www.isvap.it |
| Luxembourg | http://www.bourse.lu/uk/an2000gb.htm (Luxembourg Stock Exchange) |
| Netherlands | http://www.dnb.nl |
| | http://www.aex.nl>Millennium (AEX Amsterdam Exchange) |
| | http://www.verzekeringskamer.nl (insurance) |
| Norway | http://www.finans.dep.no |
| | http://www.ose.no/y2k/ (Oslo Stock Exchange) |

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| Portugal | http://interbolsa.pt/index.htm |
| | http://www.bvl.pt/eng/Year_2000_en_main.html (Lisbon Stock Exchange) |
| | http://www.bdp.pt/bdp/indexi.html > Year 2000 (Porto Futures and Options Exchange) |
| Spain | http://www.cnmv.es/A2000/efecto2000.htm |
| | http://www.ipyme.org/inipyme/prog4.htm |
| | http://www.bolsamadrid.es/mse/infogen/y2k.htm (Madrid Stock Exchange) |
| | http://www.meff.es/news/index.htm > MEF and Year 2000 (MEFF RF) |
| | http://www.meffrv.es/ing/indexi.htm > Year 2000 (MEFF RV) |
| | http://www.bde.es/infogene/y2000.htm (Bank of Spain) |
| | http://www.bancosantanader.bsch.es/efecto2000.htm (Bank of Santander) |
| | http://www.bbv.es/BBV/grupobbv/efecto.html (Bank Bilbao Biscay) |
| Sweden | http://www.fi.se/fffs/1998/fs9818.htm |
| | http://www.omgroup.com/pdf%20files/om2k.pdf (OM Stockholm Exchange) |
| Switzerland | http://www.swissbanking.org/e/Pages/swissbanking.htm |
| UK | http://www.bba.org.uk (information by the BBA on UK financial sector preparations) |
| | http://www.bankofengland.co.uk (contains the Bank of England's "Blue Book") |
| | http://www.londonstockexuser.co.uk/y2k/index.htm (London Stock Exchange) |
| | http://www.ipe.uk.com>bulletin board/news.html (IPE London) |
| | http://www.liffe.com > Year 2000 (LIFFE) |
| | http://www.lme.co.uk/summary1.pdf (London Metal Exchange) |
| | http://www.fsa.gov.uk (FSA) |

**For the water sector:**

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|---|---|
| Austria | http://www. sbl.co.at |
| | http:// www.magwien.gv.at/ma31 |
| Denmark | http://www.dkvand.dk/index1.htm |
| | http://www.kl.dk/siab.asp?o_id=1869 |
| Finland | http://www.vvy.fi |

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| France | http://www.generale-des-eaux.com |
| | http://www.suez-lyonnaise-eaux.fr |
| | http:// www.bouygues.fr |
| Italy | http://www.comitatoanno2000.it/Documenti/Sicurezza %20del%20cittadino/egea.htm |
| Netherlands | http://www.mp2000.nl |
| Norway | http://www.norvar.no |
| Spain | http://www.mma.es/2000.htm |
| | http://www.servicom.es/aes/aeas.htm |
| Sweden | http://www.slv.se/vatten/index.htm |
| UK | http://www.water.org.uk |