



**Organization for Security and Co-operation in Europe
The Representative on Freedom of the Media**

**Analysis of the Digital Radio and Television Broadcasting
Implementation Draft Plan of the Republic of Armenia**

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Executive Summary

There are a number of key issues linked to introduction of digital broadcasting. This report looks at these issues in turn and points out key concerns and questions based on best European practice.

- Social and economic questions related to the access of the population to broadcasting:
The Armenian draft plan attempts to take a citizen perspective, it deals with population coverage rather than territory and it stresses eliminating inequalities of population coverage and increasing access to information. In some parts the draft plan should be clearer in explaining how this will happen. The role of the independent regulator in ensuring access also in a digital environment needs to be stressed. The possibility to use digitalisation for delivery of other information services should be explored more in the draft plan. Further, it is essential to have clear and fair rules on who should get free set-top boxes, as it is likely that criteria used in other context for social benefits may not be appropriate. There will be administrative work and costs related to this, which must be taken into account. It is important that people are not excluded from access to broadcasting at digitalisation, so reasonable support should be given. As for access to programming, the manner of selecting broadcasters to be part of the multiplexes, especially the social package, must be transparent and open. The key role of the public service broadcaster as part of this package remains. Consumer protection issues shall be part of the legislative overview needed.

- Infrastructure development including costs of investment by broadcasters and means of state involvement in covering costs:
The initial investment costs for digitalisation are high and the return may only come later. Some state involvement in financing is thus normally needed and is foreseen in the draft plan. The mixture of private and public investment is good in principle but the investment incentives for private companies are not very clear. There must be a careful balance so as not to give undue preference to certain companies. Monopolisation of the market must also be avoided, by public or private companies. Technical specifications and standards should to the maximum extent possible be those adopted in Europe and internationally to ensure the greatest possible interconnectivity and possibility for goods to move freely. Privatisation of transmitter network ownership should not be delayed because of digitalisation and any holder of the transmission network must observe access rules as well as not influence broadcasting content or which channels are broadcast. Existing infrastructure should be used and upgraded when possible in order to limit the environmental impact.

- Frequency matters:

Digital television is broadcast on the same frequencies as analogue so in many countries, like in Armenia, where there are no free frequencies, there must be re-assignment to be able to start digital broadcasting, including switching off some analogue broadcasting. The draft plan foresees this and refers to relevant ITU provisions for frequency planning. The concern is how the transition is made so as not to violate existing rights and legitimate expectations of broadcasters, on which the draft plan is vague. There is a need to ensure that non-broadcasting users (including military and similar users) of spectrum are taken into account in re-planning. Existing users also of non-broadcasting services must be accommodated and potential new users included in planning.

- The risk of monopolization of the market and interoperability and access:

As state involvement may be necessary given the size of needed investment and as in any case it is difficult to get functioning competition in early stages of digitalisation, ownership rules must be carefully applied. Limits on media ownership and related disclosure rules are very important and something that needs strengthening in Armenia but that the draft plan does not mention. Provisions on access to infrastructure are very important and must be applied properly by the independent regulatory authority to create the maximum possible competition even if there is limited infrastructure capacity. There must be transparency of terms and conditions for access. This is something that the Armenian draft plan needs to stress. The independent regulator must get sufficient powers and it is essential that the work of the regulator is objective, transparent, proportionate and non-discriminatory. The best way to proceed with selecting the network operator as well as the broadcasters to provide content would normally be through an open tender.

- Regulatory questions:

A weakness of the draft plan is that it does not touch sufficiently or clearly on regulatory questions and the very important role of the independent regulator(s). The regulator(s) should be involved in making the plan. This includes regulators for telecommunications and broadcasting as both transmission and content are relevant. Independent regulators should decide licensing matters for transmission and content, for digital broadcasting as well as for other forms of broadcasting and other communications. Licences for digital broadcasting need to include separate parts or be divided in two for transmission and the service/content. Legal certainty is an important element of regulatory work. Amendments to conditions as well as cancellation of given authorisations must always be made in objectively justified manner and proportionately. The laws on communications need to include necessary provisions for digitalisation, in legal amendments or separate laws, while many basic broadcasting legal issues remain the same – including provisions on broadcasting standards.

- The role of the public service broadcaster:

Diversity and access to good broadcasting do not happen automatically through digitalisation but must be ensured. This means that the role of the public service broadcaster in providing the social package programmes is very important and the public service broadcaster must be independent as well as have sufficient resources to fulfil its role.

- Public participation in planning for digitalisation

Digitalisation is a major change in the broadcasting landscape and of interest to consumers/viewers as well as to the industry. A maximum public participation in rulemaking including the making of the strategy is important. There may be a need for some special body to deal with digitalisation including spreading information.

1. Introduction

The Government of Armenia has prepared an implementation draft plan for digital radio and television broadcasting that is to be adopted as a Decree (hereinafter referred to as “the draft plan”). This draft explains the current broadcasting situation in Armenia, compares with the situation in some other European countries, and makes proposals on how digital broadcasting will be introduced in Armenia. The draft plan also includes cost estimates. The current analysis comments on the draft from the viewpoint of best European practice in introducing digital broadcasting. There are no binding rules in international or European law on how digital television and radio should be introduced (apart from some frequency matters and similar that may be binding in the ITU system) but each country can decide the timetable and method itself. For European Union (EU) Member States, the EU has recommended that digitalisation should be carried out by 2010 and 2012. This international legal situation means that the analysis looks at the draft from the viewpoint of what would be suitable based on various recommendations, work of international bodies, general broadcasting law, and the experience of other states rather than any set of concrete rules.

This is an analysis of the draft plan and not of Armenian broadcasting or communications legislation. Such a legal analysis is outside of the scope of this report. The analysis does not comment in detail on technical issues. Nor does it deal with the cost estimates, as this would require a deeper analysis of the price level in Armenia, which is also outside the scope of this analysis. The analysis is based on an English translation of the draft given to this consultant by OSCE at the end of September 2006.

There are a number of key issues linked to introduction of digital broadcasting. These include:

- social and economic questions related to the access of the population to broadcasting
- infrastructure development including costs of investment by broadcasters and means of state involvement in covering costs
- frequency matters
- the risk of monopolization of the market and interoperability and access
- regulatory questions
- the role of the public service broadcaster
- public participation in planning for digitalisation

This analysis deals with these key issues, commenting on the draft plan from the viewpoint of best European practice as well as raising certain questions. As an annex is the draft plan with certain brief remarks in the text highlighting matters related to the various key issues mentioned. Finally, there is a list of a small selection of useful material.

The draft deals first with digital television and then briefly with digital radio, given that many issues are similar and that generally the digital television switchover is seen to be of greater impact for society. Furthermore often the two are presented as a package. This approach is followed by most commentators on the matter. Also in this report, most comments apply to both television and radio. However, it must be noticed that digital radio has problems that are different from those of television, like that analogue radio receivers are often very cheap, people have many of them, and there is very little interest in more expensive digital ones. There is even less interest among people for digital radio as analogue radio already offers wide choice. The freeing of spectrum through digital radio is also less important. Certain issues specific to radio may become relevant later in the planning work.

The general time line as set out in the draft plan in section II.10 and the attached tables appears realistic, albeit rather tight given the economic situation of Armenia and compared

with the experience of other countries. It is however difficult to give a clear assessment of this, as there are so many different time schedules for digitalisation in Europe. The EU has expressed that there is too little co-ordination even between EU Members. So far the experience has generally been one of delays, but as meanwhile some countries will complete the switch-over and in any case there are already and will be even more examples to look at, it should be possible to have a stricter time plan for countries initiating the change somewhat later, like Armenia.

2. Social and economic questions related to the access of the population to broadcasting

One of the key benefits of digital broadcasting is the increase in broadcasting channels. The Council of Europe in its recommendation on digital broadcasting points out that the existence of a wide variety of independent and autonomous media is important for democratic societies.¹ The Council of Europe draws the attention to its recommendations on media pluralism and stresses the importance of public service broadcasting. The Recommendation clearly underlines that a citizen perspective must be taken when looking at digitalisation, to secure the balance needed between economic and other interests to avoid that there is a democratic and social deficit.

The Armenian draft plan does attempt to take a citizen perspective, as required by the Council of Europe. The draft describes in detail the coverage of the population by broadcasting, which shows that the necessary information for the digital planning exists. The information appears thorough and meets the requirement to deal with population coverage rather than coverage of territory. The draft plan mentions as a key issue to eliminate inequalities of population coverage and increase the access of people to information in an equal manner (II.4). This is a very good aim and the draft should be clearer in explaining how this will happen. The role of the independent regulator in ensuring access in a digital environment may need to be stressed. Another benefit of digital broadcasting - additional to the possibility for a multitude of channels - is the possibility of delivery of other information society services to the population, through convergence of technologies. The draft plan mentions delivery of additional services to the population (II.4) but says very little about such other services and what additional benefits this may provide.

The draft plan sets out (II.11) that it will eliminate existing inequalities in the field of access to broadcasting and create conditions for the exercise of all of freedom of information. This is apart from other benefits such as modernising, improving investment appeal and achieving a network development comparable to other European states. It is important to keep in mind that benefits of access to information and reduction of inequalities do not happen automatically and not just through a multitude of channels – it is important that there is real diversity. This must be kept in mind when deciding on the content (which channels) of broadcasting multiplexes.

In digital switch-over plans normally a mixture of free-to-air and pay services are used, with possibly some subsidies for the needed boxes to receive the free-to-air broadcasts. The experience in those European countries that started early with plans for digital pay-television with the idea that free services could get a “free ride” on the development of the paying sector experienced serious problems. The lack of consumer interest, competition from existing pay-satellite television or other services meant that the firms involved in early experiments (in Spain and the UK) went bankrupt. The Armenian draft plan follows what is now the model in Europe, of development of several multiplexes including a free-to-air

¹ Council of Europe Recommendation R (2003)9 of the Committee of Ministers to Member States on measures to promote the democratic and social contribution of digital broadcasting.

package and the choice of other paying packages, to be developed gradually. A challenge for digitalisation is to avoid an increase in inequality in the area of access to information between those people who subscribe to pay-channels and others, in reality limiting the access to broadcasting for large segments of the population instead of allowing them the benefits of more choice that digital can give. The creation of the social package of free channels as well as the question of support for set-top boxes are correctly identified in the draft plan to deal with this potential problem.

The draft proposes a set of freely available channels as part of a social package. The number of channels suggested is four to five, public service broadcasting and some channels that would be performing public broadcast functions (II.3). The meaning of “public broadcast functions” in this respect is not clear. Presumably, it means that the social package will include a variety of channels meeting different broadcast needs – this is what should be aimed at. There should be pluralism and not just a multitude. The number of channels in the free package varies between countries. In most countries in addition to existing public service broadcasting channels and any others that are freely available, after digitalisation some additional channel is offered free to the public. This may be a 24h news channel (like e.g. in Finland and Sweden) or similar, of which the public service nature is clear. The number of channels on the free multiplex that is suggested in the draft plan is in line with international standards, provided that the choice of channels is made to meet the public interest and that the number of free channels is not limited without reason.² Also the further multiplexes should include diverse channels and the selection should ideally be made by an independent regulator based on objective and transparent criteria.

Must-carry obligations on networks for the distribution of radio and television broadcasts are recognised in Europe and elsewhere for e.g. cable networks and the principle is recognised in the EU Universal Service Directive.³ Proportionate obligations can be laid down for any networks for distribution to the public - cable, satellite and terrestrial - in the interest of legitimate public policy considerations. The obligations to carry channels must be proportionate as well as transparent and subject to periodical review. The digital must-carry obligation should follow similar considerations. The draft does not say much about such obligations and the conditions for them, but it is possible this will be given further consideration in the next stages of the planning, when the paying multiplexes are developed, in which context the principles as expressed in the Universal Service Directive can serve as a guide.⁴

The countries that will transfer early to digital television like Finland and Sweden do not generally give subsidies or free boxes for reception of digital television. In a poorer country like Armenia, it is however necessary to support some sections of the population to prevent that digitalisation means that large sectors of the population will be denied access to broadcasting. The draft plan makes provisions for such support. The support should include vulnerable social groups and certain disabled people. The criteria for how to determine who will have the right to free set-top boxes will be a challenge, as it may be presumed there will be a large demand for such assistance. The kind of criteria used to determine the right to other social benefits may not necessarily be suitable in this context. At the same time, it is essential that the criteria used are transparent, objective and non-discriminatory. The determination of who has the right to support will cause administrative work and costs, which have to be calculated with in the plan.

² In a large country like the United Kingdom, the free-to-air channels may reach up to 30 channels whereas in Sweden it will be six and in Finland five plus radio.

³ Directive 2002/22/EC

⁴ As an example there was a discussion in the Conseil d'Etat (France) on a French decree from 2002 on the legitimacy of must-carry obligations coming to the conclusion that such obligations normally are legitimate as they serve a public interest even if they mean a restriction of the free choice for the service provider.

It is important that analogue is not switched off until there is near universal penetration of digital. This is recognised in the draft plan but it is important that this aim is maintained at all times so that switch-off dates are changed in case the progress is different than what was expected.

Another aspect of ensuring access to broadcasting is the protection of consumers. This relates to equipment, to the possibility to switch between operators and not be locked-in by unreasonable subscription conditions and similar. The draft does not mention consumer protection issues. These should form part of the legislative overview that is needed as a next step in the plan, both in telecommunications and/or broadcasting law and in general consumer protection law. The provisions on reasonable contract conditions and demands in this respect on operators should be similar to standards in European telecommunications law as digital broadcasting in this respect shows more similarities with the telecommunications sector.⁵

3. Infrastructure development and investments

In addition to the question of access to digital broadcasting, the costs for building up the infrastructure and how and who should pay for this is a challenge for any state switching to digital broadcasting. The draft plan makes mentions of partnership between government, television and radio companies, network operators and industry (II.6) but it is not clear what the incentives and limits for this partnership are. There is no one common European model but each country has to find the best way; this includes how industry and private broadcasters can be encouraged to make the investments without at the same time being given undue preference. In the draft, the economic and administrative incentives mentioned remain undefined. This may be done in more detail later but it should be recognised clearly also in this initial plan.

The EU, the Council of Europe and other organisations generally call for a rapid transition from analogue to digital as the cost for simultaneous broadcasting is high. This is provided that there is sufficient digital coverage. The interest of the public as well as of broadcasters must be taken into account. The draft plan aims at a fairly rapid transition and lists the required conditions to take into account and is thus in line with European standards. The fact that Armenia does not have a large penetration of cable or satellite will make the transition more complex as more people will require set-top boxes. This situation can probably not be changed, as it would be difficult to get either firms or people interested in major switches to cable now when the digitalisation will change the market anyway.⁶ Industry can and should be encouraged to provide different types of decoding devices, at low cost. There is nothing on this in the draft plan, only the provisions on support to the poorest. Although the government should not interfere with industry, it can have a dialogue and see if there are possibilities for cheaper boxes. Standards should be such as to allow the use of different ones to enable competition. Technical specifications and standards should to the maximum extent possible be those adopted in Europe and internationally to ensure the greatest possible interconnectivity and possibility for goods to move freely, not least as cooperation will be sought with international firms (II.9). The EU is taking the view that standards should be industry-lead to the maximum extent. It is important for Armenia not to lock itself into standards if there is still technological development but to be flexible, open to

⁵ An Annex to the Universal Services Directive, Directive 2002/22/EC, ensures interoperability of consumer digital television equipment in the EU.

⁶ Germany plans a very rapid switch-off of analogue. This will be possible as there is not so much analogue broadcasting in Germany (93% cable and satellite coverage).

interoperability between different ones, and to what is best for users.

Infrastructure investment for introduction of digital broadcasting will be a major issue and it is a bit unclear in the draft plan what the incentives are that the responsible operators will make the necessary investments (II.7). The role of the state of “organizing the transition” is rather vague. What must be recognised when estimating costs and investment readiness of private entities is that the initial costs are high and the increased attractiveness and investment potential of digital broadcasting comes only after a time and at a cost. Advantages will materialise later as is said in the draft (II.6) but the time and size of such advantages is not known and the issue is too new everywhere to be able to make any exact comparisons. In the draft plan, not all costs for broadcasters to make the switch-over are included. Private broadcasters are expected to carry some of the costs. This is reasonable but it must be recognised that some incentives may be needed in order for them to be willing to make investments. The statement in II.3 that awaiting the digital market to become solvent, the companies shall derive revenues from advertising does not take into account the reality of advertising markets. Advertising revenues in Europe generally have dropped and when there is low penetration as well as fragmentation of the audience, the market is rather unattractive, which means that digitalisation may mean less advertising revenue. Apart from entailing a limited possibility for private broadcasters to make money from advertising, in order not to create worse conditions for private broadcasters, this may also have consequences for broadcasting legislation on issues such as the public service broadcaster’s right to advertising, so that the market is not even more disturbed.

Although there are various players that stand to gain from the digitalisation, like new broadcasters that may get the spectrum available, manufacturers of equipment, providers of other service, etc, these may not be those that have to carry the initial costs. As in telecommunications liberalisation those that carry cost may to some extent do that in order for others to be able to compete with them. This naturally puts a stress on competition authorities to try to determine the best balance between allowing cooperation and giving special rights. Competition issues such as concentration and cooperation issues, if a certain concentration may lead to dominance that is likely to be abused, must take into account the special needs like very heavy infrastructure investment. It may be possible that certain concentrations are the only way to prevent that a firm goes bankrupt.⁷ Access rules are crucial, but it must be recognised that such rules may strengthen the dominance of the one holding the network if it limits the development of other networks. Often the network operator is the state-owned or previously state-owned body, that is dominant, but digitalisation should not be seen as a means to cement the dominance of this body. Nor should it hold up privatisation of such state-owned undertakings. Experiences from telecommunications liberalisation may be useful to study as the issues are similar. The involvement of the telecommunications regulatory body is important.

State funding and government guaranteed investments may thus be needed for digitalisation, but these must be made carefully so as not to unduly favour any one operator and not violate state aid and other competition rules. The EU is investigating if certain financing of digitalisation violates state aid provisions, which indicates that the European view is that digitalisation as such is not an excuse for not following other rules.⁸ Also, privatisation in the broadcasting sector should proceed nevertheless and digitalisation not be used as an excuse to maintain a higher state involvement. In many countries, the broadcasting transmitter network has been separated from the broadcaster as well as privatised, which is normally positive. This is a separate issue from digitalisation and digitalisation should not be allowed

⁷ See the discussion in Case T-158/00 of the European Court of First Instance.

⁸ Commission investigations in 2005 on the conditions for use of the transmission network in Berlin-Brandenburg and in Sweden.

to delay such developments. Regardless of possible public ownership of the transmission network, access provisions must be strictly applied and transmission ownership should never mean any interference in broadcasting content or in deciding which channels can be broadcast. This is a regulatory issue for the independent regulator. The public service broadcaster must be protected from government interference just like private broadcasters.

The draft describes the existing infrastructure in detail, describing the currently existing infrastructure and the population coverage. This is very important information as a basis to determine what investments are needed. It can be seen that investment would indeed be needed as the current system needs to be upgraded even if it can be used to some extent. This approach is correct, to use existing infrastructure as much as possible. Environmental impact, popular resistance (many new masts, etc) as well as cost of new installations must be taken into account and using what is there makes sense, as does the modernization in stages. Transparency and publicly available procedures to ensure that all relevant views are taken into account must be applied when considering rights of way to install infrastructure.⁹ Co-location and facility sharing must be encouraged.

Different options for the transition are mentioned and this is an area where public rulemaking would be relevant. Many commentators feel that a terrestrial network is the best for most of digital television, supplemented by satellite. The terrestrial network largely already exists as existing infrastructure can be used and terrestrial networks are the only ones that can be received on portable receivers in a useful manner. However, television via broadband is an interesting technology and possibilities for this should at least be mentioned in the plan, making allowance for further work in this respect.

It is mentioned that network operators must obtain licences to deliver cable television systems and that these operators will reconstruct collective reception systems (II.7). It is not clear if there is competition among such operators and if they will be interested in constructing the said systems, as the current cable spread appears to be weak. It is mentioned in some contexts that the licensing system in place should be changed, here it appears the existing system shall be used.

4. Frequency matters

One of the benefits of digitalisation is that less frequency space is needed, more channels can fit on the same amount of spectrum. Initially however there is a need for spectrum that is often not available without having to close other services. The band is the same as for analogue broadcasting which is one reason (apart also from cost for broadcasters) that the parallel broadcasting should not go on for too long. The frequency planning is in many countries difficult, especially when there are no free frequencies. This is said to be the case in Armenia (II.4). It is then necessary to switch off analogue before digital can be introduced. The draft plan contains an assessment of the radio frequency spectrum needed (II.8) and refers to ITU rules and plans. ITU has allocated frequencies for the digital broadcasting in 2006 in amended frequency plans. In this respect, Armenia should follow the ITU plans and it appears it is fulfilling its obligations in the ITU. The allocation to different uses is decided by ITU, but the assignment to different users is a domestic matter. Comprehensive plans are correctly mentioned, taking into account re-allocation and re-assignment. One important issue mentioned is that attention should be paid to non-broadcasting organisations and the spectrum they use. Another thing not much mentioned in the draft plan is that convergence of technologies may mean that other new users will be interested in the same spectrum as the digital broadcasters. Furthermore, digitalisation may also open possibilities to use other

⁹ See more on this below in the section on public consultations.

services. The draft mentions this but without much discussion.

The draft plan stresses as a specific feature for Armenia that a lot of spectrum is taken up by e.g. military users. It must be examined if such large use is necessary and such uses should be harmonised with civilian uses. It is important that efforts are made to include relevant partners such as the ministry of defence in the discussions on digitalisation at an early stage so that any extra frequency space can be freed, especially at a time of need for testing of digital. The liberalisation (conversion) measures for the broadcasting frequency spectrum (II.4) must include a comprehensive review of all the issues linked to frequency use. There may be a need to shift users in the frequency spectrum. The draft plan recognises frequency consequences of the change-over and the need to re-plan the frequency spectrum (II.7 etc). The frequency allocation difficulties in Yerevan that are predicted must be handled in such a manner so as to ensure that existing licence holders do not find their frequencies arbitrarily taken away or disturbed. The detailed analysis mentioned must also prepare solutions.

The key issue in the area of frequency management is indeed how to handle the transfer, namely what happens with existing broadcasters. A moratorium on new licences for analogue is good in principle but there may be other issues such as existing broadcasters wanting to expand coverage or change parameters. It is difficult to maintain a total block on any such changes for what may be a long time in what is still rather an insecure future, not knowing when and how the digitalisation will finally happen. Legitimate expectations and principles of good administration come into play. If someone has a licence and for some reason cannot enjoy the benefits of it, depriving him of any chance to amendment may violate his rights. Careful regulatory work is needed and more (visible) input from the independent regulatory authority in the plan.

As in all frequency planning, multilateral frequency plans may be needed to avoid risk of interference. ITU rules and procedures should always be followed but it must be noted that ITU requires co-operation with neighbouring states. This is one aspect missing from the draft plan both in technical and other fields. There is a mention of Russian channels being received (presumably from Russia) but no discussion on this.

5. The risk of monopolization of the market and interoperability and access

In a developed digital broadcasting market viewers are more similar to consumers in a traditional sense, broadcasting can become more linked to viewer demands with more choice and diversity. At the same time, there is also a danger of monopolization if one service provider gets a dominant position. The barriers to entry for others will be quite high both because of the infrastructure and because consumers will be tied to a certain broadcaster through technical facilities, contract terms or programme preferences. Regulators must identify situations where digital broadcasting may lead to anti-competitive monopoly situations, which is extra difficult as it is normally necessary to promote or give some incentives in order to start up digital broadcasting and not stifle innovation. If there are already monopoly and dominance problems, these may be increased by digitalisation and this means that such issues that may exist regardless of digitalisation must be addressed and there must be vigilance not to create such problems through digitalisation. Limits on media concentration become even more relevant in the digital area and legislation to combat this is even more important. While it is recognized that there are no easy solutions, the draft does not show sufficient understanding for this problem and does not discuss how to avoid it. The draft plan mentions fostering competition (II.5) but it does not say much about how this will be done and it does give dominance to one player to start with. According to the OSCE report on Armenian media from July 2006 Armenia has insufficient ownership disclosure legislation, which means that there is a lack of transparency on ownership of media. In

addition, there is a lack of real pluralism in broadcast media. Against this background, it is important that the introduction of digital broadcasting does not further complicate this picture. The mentioned problems of the broadcasting sector must be addressed parallel to the digitalisation plans.

The draft plan foresees to start with broadcasting from the state owned service and later when the transition is complete, private television companies can compete on equal conditions (II.3). This is a good aim but difficult to achieve when the market will remain limited and not solvent for a while and when one operator will have been allowed to dominate. The draft lacks encouragement of regional or local services as well as any cross-border international cooperation plans.

As the EU points out,¹⁰ state policy interventions should be transparent, justified, proportionate and timely to minimize risk of market distortion. In the draft plan, the transparency as well as the justification of the state involvement is not clear. The draft plan recognizes the cooperation between state and private sector but appears to give many powers of intervention to the state. The kind of clear aims that the EU stresses helps to determine that the justification of state interventions are not clear enough in this draft, but it is presumed such aims will be made clear in the continuing planning work of which this is a beginning.

The best way to proceed with selecting the network operator as well as the broadcasters to provide content would normally be through an open tender inviting proposals for both elements.¹¹ Having more than one network service provider would be better from a competition viewpoint, but this may be difficult to achieve especially in a small country and may not be suitable for other reasons (excessive infrastructure installations, etc). The access provisions should ensure that the fact that there is only one network operator does not cause problems. At the same time, if competition can be encouraged, this should happen. One key element of a digitalisation strategy should be to promote cooperation between operators and ensure interoperability. This part is weak in the Armenian draft plan. The EU has rules on interoperability and even if Armenia is not an EU Member, these may serve as examples of modern principles.¹²

It appears from the draft that most transmitters in Armenia are state owned, with only a small proportion of privately owned transmitters. One of the concerns of the draft plan is the dominance of state ownership and of one player in the market. In the EU there are rules on this that can be used as a guide also for non-EU members, showing principles of how access should be allowed to permit competition even in areas where there is infrastructure dominance. The draft does not mention these issues much and a clearer understanding is needed of how to combat dominance of one player and monopolisation of the market both for transmission and content. The issue as such and the potential problem is not unique to Armenia but something all countries have to deal with. There are no golden solutions but a need to be vigilant. The draft should deal also with how to encourage competition as well as with the essential corollary of how to ensure access. This puts important stress on the regulator. A transmitter company owning transmitters and leasing these on a commercial basis including to the public broadcaster may be better than a public entity owning transmitters.

A key element to avoid monopolisation is to make legal obligations of allowing others access to the infrastructure. For EU Member States, providing such access is a requirement

¹⁰ COM(2003)541 final.

¹¹ Lithuania provides an example.

¹² Directive 2002/19/EC, the Access Directive.

according to the Access Directive.¹³ The Directive stresses that in an open and competitive market there should be no restrictions that prevent undertakings from negotiating access and interconnection agreements between themselves, including cross-border agreements. In principle, all requests made in good faith for access should be met on a commercial basis. The parties can determine conditions for access. At the same time, when there are large differences in negotiating power between undertakings and when some undertakings rely on the infrastructure of others, there must be a regulatory framework to ensure that the market works. This puts a stress on the work of independent regulatory authorities. It is important that the regulatory authority as well as the framework of rules and regulations in Armenia foresee that the question of access is properly handled. The draft plan states that private channels should reimburse some costs of the Network Operators (II.3). Here transparency and only objectively justified costs must be reimbursed. The regulator must evaluate this. Interoperability and access are remedies against possible dominance by one firm and even if they may be imperfect remedies, proper application by the regulatory authority is crucial.

The Access Directive also points out that competition rules alone may not be sufficient to ensure cultural diversity and media pluralism in the area of digital television. This indicates again the importance that the regulatory authority keeps an eye on what obligations are stipulated for the players in the digital broadcasting market so that any monopolisation is kept to a minimum. Content issues need to be looked at separately from transmission but the desired content must have access to transmission. The directive clearly indicates that the regulatory work and assessment of demands made is an ongoing work and must be handled through continuous market analyses. As in all EU competition and telecommunications legislation, operators with a significant market power have special obligations. Generally, for the communication sector in Europe, economic market analysis should be used and gradually *ex ante* sector-specific rules should be reduced in favour of general competition law. However, for specific issues such as digital broadcasting special rules will be necessary. The regulator must balance the needs of the infrastructure owner and of other users. In a country where general competition law and its application and enforcement may be weak, it is all the more important that the regulator monitors the proper functioning of the market. The EU directive requires transparency of terms and conditions for access and interconnection. This is something that the Armenian draft plan needs to stress, that is now absent from it. The independent regulator must get sufficient powers and it is essential that the work of the regulator is objective, transparent, proportionate and non-discriminatory.¹⁴

The EU Framework Directive¹⁵ specifies that interoperability of digital interactive television services and enhanced digital television equipment at the level of the consumer should be encouraged in order to ensure the free flow of information, media pluralism and cultural diversity. It is desirable for consumers to be able to receive all digital interactive television services having regard among other things to technological neutrality, future progress and the need to promote uptake of digital television. Digital platform operators should strive to implement open application programme interface (API) which conforms to European standards. MoUs and similar may be used to encourage migration between systems.

6. Regulatory questions

One of the weaknesses of the draft plan is its treatment of regulatory issues. As digital

¹³ Directive 2002/19/EC

¹⁴ The Access Directive also requires public electronic communications networks for the distribution of digital television to support the wide-screen television services. Special requirements for conditional access systems to digital television and radio broadcasts are set out in an annex to the directive. Even for EU Member States however, there are possibilities for regulatory authorities to set other criteria as the market is constantly evolving.

¹⁵ Directive 2002/21/EU

broadcasting frees much more space in the spectrum, such elements of regulatory activity that are triggered by the scarcity of spectrum do not remain in a digital environment. At the same time, other tasks do remain or are created for the regulator. It is unclear if the regulator has been involved in drafting the plan.

Generally, the trend in Europe (and elsewhere) is towards a regulatory system for communications that uses as light regulation as possible, that is technology neutral in that it uses an authorisation system that covers all comparable services in a similar way regardless of the technologies used.¹⁶ The least onerous regulation or authorisation system should be used, which normally means a general authorisation (with a requirement to register rather than a need to apply as a condition to provide a service). At the same time, the system must be adapted to the issue it regulates and in the area of digital broadcasting, where there can be a need to take active action to prevent the creation of monopolies, regulatory authorities must have the necessary tools. The regulation of transmission should be separated from that of content, while at the same time it is recognised that the links between regulation of transmission and content must be taking into consideration especially in a digital environment. The traditional separation between what has been seen as a telecommunications regulatory issue (transmission) and a broadcasting one (content) does not fit all aspects of digital broadcasting. Regulators should have the flexibility to take into account efficiency and welfare considerations caused by convergence and the functional and economic links between the transmission and what is transmitted in order to guarantee media pluralism, cultural diversity and consumer protection.¹⁷ At the same time, just as for any broadcast regulation, content regulation can never mean prior censorship or undue restrictions on freedom of speech. For the guidance on what is legitimate broadcast regulation, existing law and principles as shown not least in the case law from the European Court on Human Rights concerning Article 10 of the European Convention on Human Rights remains relevant.

Digitalisation will entail changes to communications legislation - broadcasting and telecommunications laws.¹⁸ What are needed are licensing provisions suitable for the digital environment and a set of rules concerning access and interoperability of networks and devices used for the transmission or reception of digital services. Objective, clear and transparent, non-discriminatory rules for licensing set out in law are at least as important in the digital age as in analogue. There should be open tenders for digital broadcasting licenses as well as for other licences. To some extent, special rules are needed for licensing as the transmission system, the use of multiplexes etc, is different than traditional transmission, but certain basic issues remain the same. The basic idea of a licence to ensure the technical requirements are met and another for what is broadcast is not new. For content, what goes on the transmission system, the key is that licensing still should exist to verify that basic principles apply. The legal-regulatory framework generally needs to incorporate best European standards on broadcasting principles. Protection of minors, avoidance of hate speech and such issues are even more relevant for digital broadcasting (as also stressed in the Council of Europe Recommendation). It is not possible to “repair” problems with the legal-regulatory framework through digitalisation. Unless there are efforts by proper bodies, the digitalisation per se will not lead to improvement of social functions in the fields of culture and education. The integrated information network is not created by itself (II.4). Domestic content production also needs support or there is a danger of less plurality even with more channels.

The tasks of the regulator remain very important in digitalisation, not least in selecting

¹⁶ See on this the EU Authorisation Directive, Directive 2002/20/EC as well as the Framework Directive, Directive 2002/21/EC

¹⁷ The Framework Directive, Directive 2002/21/EC

¹⁸ This analysis does not include an analysis of the relevant Armenian legislation.

programmes for the social package as is mentioned in II.3 of the draft plan. Here it is said the programmes of private broadcasters selected should be such of those performing public broadcast functions. This is a bit unclear but presumably refers to the kind of content they have. It furthermore stipulates that the companies must be solvent and the programmes technically sound and fit for the relevant kind of broadcasting. These are very legitimate demands but what is important here is how and by whom the selection is made. Clearly, the regulator should make a selection based on transparent and objective criteria. In the future creation of additional multiplexes as well broadcasters should have a real possibility to compete for the selection.

Digital licences must be given for a long enough period so that the licensees feel secure enough to make the necessary investments. Renewal should be possible and licence terms should be flexible so that various services may be offered.¹⁹ It may also be necessary with more flexible licensing conditions when various things like the roll-out and switch-over are still insecure. The digital licences will have to be adjusted to what is special for digital.

Specific legislation on digital broadcasting exists in certain European countries (like Sweden, Spain, Italy), in other countries provisions are inserted in general communications legislation (UK, Germany). Both versions are possible but in any case there needs to be special provisions as digital is a special issue, not least regarding interoperability. Legislation must be in force before the actual launch starts and that regulatory matters are not lagging behind developments.²⁰ The question of whether legislation or technological development should come first is always difficult – on the one hand there may be legislation holding up developments, on the other hand developments may create a *fait accompli* so that legislation cannot have any effect. But when a technological development has reached the stage where it is of direct relevance to consumers, the legislation must be in place.

National regulatory authorities must be in possession of all necessary resources so that they can fulfil their requirements. The convergence between broadcasting and telecommunications that not least digitalisation entails means even more need to have good cooperation between regulatory bodies. Some aspects of what is seen as telecommunications regulation will be applied to broadcasting. Probably the Armenian regulatory authority may need some strengthening in order for this draft plan to be properly implemented, and this should be set out. As the regulatory authority should be able to act to resolve disputes between undertakings, it is very important that it is independent from any undertaking. There should not be close links between the former state broadcaster and/or owner of the transmitters and the regulator as is a risk when they come from the same background.

Legal certainty is an important element of regulatory work. Amendments to conditions as well as cancellation of given authorisations must always be made in objectively justified manner and proportionately. The persons concerned must be given reasonable time to adjust and shall also be given a chance to express their views on changes. One weak point of the draft plan is its handling of transitional issues, of the existing licensees that presumably to some extent have ongoing licences. If these are to be terminated early, several legal issues may arise like the question of legitimate expectations. Licences cannot just be terminated early without consideration for the interests of broadcasters that have made investments and counted on a certain business period. In the context of terminating or shortening licences, fairness and objectivity must be observed. There is a danger that some broadcasters, selected to take part in the digitalisation, will be treated better. As mentioned in the section frequency issues above, although a moratorium on new licences for analogue is possible this also raises

¹⁹ See e.g. COM(2003)541 final.

²⁰ As happened in Albania where preparation for digital television was made without provision for it in law, which lead to strong criticism from e.g. the OSCE, see Report

questions of legitimate expectations of existing broadcasters.

One regulatory aspect that should not be forgotten is that of consumer protection. The regulator should ensure that consumers can switch between providers, that they are not locked into unreasonable contracts, etc. This is a combination of consumer protection angles of telecommunications regulation and new provisions for digital.

Many countries have special organs for digital switch-over. Such an organ will also have an important role in publicising and publicly discussing the issue. It is not clear what organ will fill this role in Armenia. This body should work very closely with the independent regulator.

7. The role of the public service broadcaster

Digital should not mean that public service broadcasting and the principles it stands for and the tasks it has disappears. This is stressed by the Council of Europe, EBU and other international bodies. Digitalisation is a challenge to public service, not least through the fragmentation of audiences, but it should not be seen as a means neither to get rid of public service broadcasting nor as a method to fix any problems it may have automatically.²¹ The necessity to finance public service broadcasting and to ensure that it manages to fulfil its remit also in a digital environment remains. A strong independent public broadcaster is thus needed. In the draft in the different mentions of partnership between government, television and radio companies, network operators and industry, the role of public service broadcaster is not clear. One danger in digitalisation is that the public service broadcaster is given a leading role without adequate funding. The subscription fee for the public service broadcasting is normally not seen as money to use for digitalisation as this is intended to support the programme-making of the broadcaster.

In the definitions in the draft plan, the social package is defined as a package of programmes created with state budget funding. It is not incorrect, but it may be noted that the draft does not talk much about public service broadcasting. This is not the same as state (and especially not government) broadcasting, It is said that the social package should be the public service package but apart from that the role of the public service broadcasters is not always clear. Any problems and deficiencies with public service broadcasting should be remedied irrespective of digitalisation, and the state involvement as such – as in the involvement of state organs – in broadcasting should not be any greater because of digitalisation.

The idea of the social package is that it will ensure that broadcasting of a public service nature is available to all people. The task of the public service broadcaster to provide such broadcasting remains with digital broadcasting. More channels and numerically more choice does not necessarily mean more plurality so the task of the public service broadcaster to cater for other needs than what private broadcasters do is still there and the public service broadcaster needs to have suitable means for this. Not just commercial consumer demand can decide what content should be available and how access to information can best be met through broadcasting. The ideas of certain events being so important that they must be accessible to all as in European Broadcasting Union provisions is only one indication of that there is a public interest in certain broadcasting content. In most countries, at least one new programme like 24h news will be added to existing public broadcasting programmes at the time of digitalisation. The social package can also include some free commercial channels that complement the public broadcasting ones. This appears to be the aim of the Armenia package (as in II.3) and the exact type of programmes shall be selected as an initial stage of

²¹ UNESCO Workshop at World Summit on Information Society in Geneva December 2003.

the plan. It is in such selection that the question of pluralism comes into play. Content pluralism is mentioned in the draft, the importance of this can be underlined.

8. Public participation in planning for digitalisation

Stimulating demand and interest for digital broadcasting is an important part of the switch-over, not least to get people to buy set-top boxes and voluntarily migrate to digital. Such migration has been disappointing all over Europe, which underlines the importance of information to stimulate demand. Making people aware of the process is important. Information campaigns such as the web-pages in the UK, Finland and Sweden are examples of attempt both to create interest and to spread knowledge.

One of the principles in the Council of Europe recommendation is that states should draw up a well-defined strategy for digitalisation. This recommendation is met by Armenia with the present draft plan even if there may be areas where the strategy could be better defined. Hopefully the draft plan is a first step in the definition of the strategy and that there will be a process of involving the public in the process of defining the strategy. In many countries public rulemaking processes have been held regarding the digitalisation strategy, to invite comments from a broad public. This is to be recommended in order to create interest and get input early on from relevant stakeholders. Even if the general public may not be so likely to contribute much in such a technically complex process, representatives of industry, other particularly interested parties and others may contribute. The contribution is important for different aspects like content of broadcasting, technical specifications, infrastructure matters and other. Consulting interested parties is also a principle in the EU directives.

The draft does make a mention of setting criteria and making the public aware of them by mass media but other than this brief mention (II.5) not much is mentioned about using media and making people aware through this. Media use also does not take away the need to also have an active public rulemaking process.

Different options for the transition are mentioned, which is good, but this is the kind of issue where a procedure of public rulemaking would be interesting, to get more input regarding the pro's and con's of the various options.

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The legal nature of the document is not totally clear, at least without exact knowledge of the Armenian legal system. It is called a government decree, which would appear to indicate a normative nature, but the style is more descriptive than normative. The document sets out in section 4 that “The main goal of this Plan is to create conditions for a transition from analog to digital broadcasting in the Republic of Armenia” so presumably its main aim is to be the first step and further decisions will be taken on e.g. creating the plans mentioned in the timeline, i.e. this is the plan on how to proceed with detailed plans rather than the final plan for how the work should be done. This is relevant as the document is in some aspects too vague to be the definite plan for digitalisation. There should be a public discussion to make the final strategy.

I. Definitions

All not generally known terms used should be defined, which is not the case. (As an example MMDS - multi-channel, multi-point distribution systems - are not defined.)

1. For purposes of this Plan, the following terms shall have the following meanings:

Cable television broadcasting or cable radio broadcasting: the distribution of television or radio programs, during which signals transmitted through cable lines of communication are received by end-consumer devices;

Transmitting earth station: an earth station that ensures the transmission of television and/or radio program signals to broadcasting and/or communication satellites;

Social package of television and/or radio programs: a package of television and/or radio programs created with state budget funding and transmitted to the public without subscription limitations, the list of which is approved by the Republic of Armenia Government;

Television transmitting station or radio transmitting station: air (wireless) facility of television or radio broadcasting, comprised of one or several transmitters and feeder structures;

Television program or radio program broadcasting network: a technological system that includes communication means and lines, and is designed for real-time broadcasting of television program or radio program signals using air, cable, or satellite links;

Direct satellite television broadcasting or radio broadcasting: broadcasting of television programs or radio programs, during which the satellite-transmitted signals are received by end-consumer devices;

Television broadcasting or radio broadcasting: activities carried out by the television program or radio program broadcasting network operator, which are aimed at meeting the

population's, state bodies', or legal entities' need for television or radio programs and additional information, and at enabling the broadcaster to broadcast television or radio programs;

Air over-ground transmission of television and radio: television or radio program distribution services, during which television or radio program signals transmitted through over-ground transmitting stations are received by end-consumer devices.

II. Television Broadcasting

2. Overview of Television Program Broadcasting Network of the Republic of Armenia. Population Coverage of Multi-Program Television Broadcasting.

In the territory of the Republic of Armenia, the television program broadcasting network currently ensures the distribution of 3 public and 53 private television companies' programs.

Television program coverage of Armenia's territory is as follows:

- Programs of the Public Television Company: 99.8%; and
- Programs of the 2nd Armenian Channel: 93.8%.

In addition to transmitters in Yerevan, some private television companies (Armenia, ALM, and Shant) have 10-15 local television transponders each. Besides, 33 private television programs are broadcast in the regions (Marzes).

As of January 1, 2006, population coverage of television broadcasting in the country was as follows:

One and more TV programs:	99.8%;
Two and more TV programs:	97.4%;
Three and more TV programs:	95.1%;
Four and more TV programs:	88.4%; and
Five and more TV programs:	85.8%.

Air television transmission is the main means by which end-consumers' devices receive signals. There is a considerable misbalance between the center (including the capital city and the settlements in the Ararat Valley) and other settlements in terms of the number of broadcast television programs. In Yerevan, over two dozen television companies operate permanently, whereas 128 settlements with a total population of over 80,000 receive only one television program, 90 receive only two, and only 781 receive three and more television programs. Moreover, in the villages that receive 2-3 television programs, one is a public television program and the others are mainly Russian television programs.

0.2% of Armenia's population is not covered by any television program whatsoever (including 0.3% rural and 0.1% urban populations). Nevertheless, 85.5% of the population can watch 5 and more television programs.

Population coverage of the MMDS is estimated at 1.3%, while another 0.5% of the population directly receives television programs by satellite.

With the exception of MMDS (about 60 television programs), all air transmission in the capital city is based on analog.

Population coverage of television programs is presented in Tables 7 and 8.

Statistics on television program coverage are presented in Tables 10 to 14.

The analysis of statistics on population coverage, including the urban-rural breakdown of coverage, reveals the following:

1. Population coverage in the Marzes (regions) is generally lower than the national average:
 - a) One television program (99.8% on average) in 4 Marzes (including Aragatsotn, Shirak, Vayotz Dzor, and Syunik); and
 - b) Two television programs (97.4% on average) in 7 Marzes (including Aragatsotn, Shirak, Vayotz Dzor, Syunik, Gegharkunik, Lori, and Tavush).
2. The coverage of urban population is lower than the national average:
 - a) One television program (99.9% on average) in 3 Marzes (including Aragatsotn, Vayotz Dzor, and Syunik); and
 - b) Two television programs (99.9% on average) in 3 Marzes (including Aragatsotn, Vayotz Dzor, and Syunik).
3. The coverage of rural population is lower than the national average:
 - a) One television program (99.7% on average) in 4 Marzes (including Aragatsotn, Shirak, Vayotz Dzor, and Syunik); and
 - b) Two television programs (92.8% on average) in 5 Marzes (including Shirak, Vayotz Dzor, Lori, Tavush, and Syunik).

Thus, the one television program and two television program coverage indicators in the Vayotz Dzor and Syunik Marzes [for both the urban and rural population] are below the national averages.

In the television program broadcast network of Armenia, television program signals are broadcast mainly using over-ground links (organized through radio relay links (RRLs)). In remote settlements that are detached from the main communication routes, the television programs of the Public Television Company are received from the satellite. In certain cases, television programs are received by air by means of television transponders.

The distribution of the Public Television Company's programs outside of Armenia, as well as in 89 settlements of Armenia, is carried out through a leased satellite segment.

As of January 1, 2006, multi-program television broadcasting of the programs of public and private television companies at all levels (public, Marz, and local) is performed by 433 transmitters,

which are located in a total of 192 television stations of the National Television Program Transmission Network. 30 of these television stations are private.

3. Benchmarks of Television Broadcast Development Plan

Public television programs (H1 and Nor Alik) perform public broadcast functions, which they must retain, together with policies of ensuring universal access and content pluralism, in the event of transition to digital television (DTV) broadcasting.

In the context of transition to DTV, the objective is to form one mandatory social package of free-of-charge television programs (comprising 4-5 television programs) to be broadcast country-wide and abroad (through satellite) under DVB standards.

In addition to the Public Television Company program, the social package of TV programs—as a multiplexed package—would include also the programs of 2-3 private TV companies, which would be performing public broadcast functions in creative and technical terms. They must be solvent companies with programs that are technically sound and fit for combined-mode, standard-format broadcasting.

During the transition, before the formation of the digital television broadcast market (i.e. before the emergence of solvent demand), these companies could derive their revenues from advertisement.

As mentioned in the analysis, this raises questions. One question directly linked to the formulation is if they are later prevented from advertising? Advertising on digital is complex, the fragmentation of audiences, etc, means that the revenue may not be sufficient. The question of financing digital switch is important and difficult.

In general, the transition to DTV would imply the formation and broadcasting of three more packages of TV program packages (each with 4-5 TV programs) throughout the country.

The formation of social and other supplementary packages of television programs (for purposes of over-ground, cable, and satellite network broadcasting) would be carried out in the center (i.e. in Yerevan), from the main station, using the technical facilities of the primary operator of the Television Program Broadcast Network, which is already rendering television broadcast services.

In order to deliver the content of Marz television companies to the main station and to include them in the social program package, the Television Program Broadcast Network would need to have sufficient two-way capacity of links between the main station and the regions.

The local connection (multiplexing) of regional television programs' signals would require additional intermediary facilities to be created within the Television Program Broadcast Network, as well as large investments in hardware.

Later, after the transition to DTV broadcasting is complete, packages of private television companies' television programs could be formed both centrally and in the regions, in order to create

equal conditions for television companies. The television companies would bear the costs of delivering such packages to the destination and of spreading them.

As discussed in the analysis this is somewhat unclear, not least as regards the role of the regulator and how the licensing procedure would take place. As for the television companies bearing the costs of delivering such packages to the destination and of spreading them, rules on access to infrastructure are relevant.

The broadcasting of additional television programs over DTV broadcast networks could be carried out by decision of the television company creating the television program, which would also need to contemplate reimbursement of at least the additional operation costs born by the Television Program Broadcast Network operators in connection with the broadcasting of such programs.

The regulator must have a role in determining the costs to be reimbursed to ensure fairness.

4. Goals and Objectives. Key Principles of Implementing a Digital Air Television Program Broadcasting Network.

The main goal of this Plan is to create conditions for a transition from analog to digital broadcasting in the Republic of Armenia.

The implementation of a DTV broadcasting system in Armenia is driven by the necessity of more efficiently and adequately meeting the public demand for information. This objective can be accomplished by reforming the television network to become a modern and economically-sustainable network capable of fueling its own development in a market environment.

The transition to digital broadcasting requires complex solutions: all the links in the broadcaster-consumer signal broadcast chain must operate in digital format.

Another objective of this process is to eliminate inequalities of population coverage by means of multi-program television broadcasting and to ensure equal accessibility of information resources for the whole population.

This approach would also ensure more efficient use of the radio-frequency spectrum, as well as an increase in the number of programs broadcast by air, the implementation of interactive broadcasting, and the delivery of additional services to the population. ***Not discussed much.***

The transition to digital television broadcasting would necessitate the acquisition for the population of digital television receivers or set-top-boxes for existing analog TV-sets. Unless the majority (85-90%) of the population have receivers, it will be necessary to retain the analog broadcast system in the country. ***Key issue! Especially in a poorer country, a risk of black-out instead of increase in broadcasting. Nowhere has the voluntary interest been big enough.***

An opinion poll conducted by the Public Television Company has shown that, as of January 1, 2006, 100% of Yerevan's population and 81.1% of the population of the rest of Armenia have foreign-made TV-sets. ***Relevance?***

Therefore, in order to develop this market segment, to meet the population demand for receivers

at affordable cost, and to overcome the transition stage, both urgent state regulatory measures and sound behavior of market players will be required. ***What are these regulatory measures?***

At the first stage of implementing DTV broadcasting, the following legal measures have to be undertaken:

- a) Defining the list of social package television programs the free broadcasting of which is guaranteed by the state;
- b) Stipulating arrangements and setting the period for concurrent operation of analog and digital broadcasting of television programs;
- c) Adopting national standards on digital transmitting and receiving devices;
- d) Approving the long-term plan of the radio frequency spectrum and the chart of radio frequency layer distribution between radio services in Armenia, in accordance with the radio frequency use and distribution conditions set by the International Telecommunication Union for Zone number 1;
- e) Carrying out liberalization (conversion) measures for the radio frequency spectrum, as contemplated for the development of DTV broadcasting;
- f) Defining separate procedures for the licensing of DTV program creation and distribution, as the current Armenian licensing framework does not provide the necessary legal grounds in this field; and
- g) Developing a comprehensive legal-regulatory framework over the relationship between the market participants, including operators, other entities of national information networks, and consumers.

The technical bases of analog-format television program broadcasting systems, which exist currently as an integrated technological system, were put in place in the late 1980s. By that time, powerful television transmitting stations and numerous television transponder stations, together with the supporting infrastructure, had already been built. This system serves the broadcasting of public television programs and is the foundation for the majority of private television companies. The frequency spectrum designated for over-ground television broadcasting has practically been exhausted (with the exception of some remote regions) and does not allow increasing the number of television programs within the existing analog network.

Further development of multi-program television broadcasting is directly contingent upon the transition to digital broadcasting.

The following are the minimum targets of DTV broadcast network development, which must be achieved in order to be able to start deactivating analog television broadcasting and to convert the analog transponders to digital mode:

- Making reception of DTV signals possible for the absolute majority (99-100%) of the

population at their permanent places of residence; and

- Ensuring availability of digital TV-sets or set-top-boxes for the vast majority (85-90%) of the population to be able to receive DTV signals.

Implementing the DTV broadcasting system creation plan in the Republic of Armenia will help achieve the following objectives:

- a) The nation will be able to join the global information society;
- b) The state will be able to perform its social functions in the fields of culture and education;
- c) An integrated information framework will be created and information security will be ensured;
- d) The television broadcasting network will be converted to a modern and economically-sustainable network capable of fueling its own development in a market environment;
- e) The inequalities of population coverage by means of multi-program television broadcasting will be eliminated and equal accessibility of information resources will be ensured for the whole population;
- f) The radio-frequency spectrum will be more efficiently used, the number of programs broadcast by air will be increased, interactive broadcasting will be implemented, and additional services will be delivered to the population; *What are these additional services, they should be discussed more.***
- g) Television video and audio transmission quality will be improved, and lower transmission capacity will be utilized in comparison to analog systems;
- h) High-quality reception will be ensured by means of mobile and easy-to-carry receivers;
- i) Television programs and additional data (including information on the activities of public and cultural organizations, transport schedules, and other information, advertisement, TV market, orientation programs, and the like) will be transmitted via integrated multiplexed digital links, which will be determined by market demand and the capacity of the television broadcasting network operators;
- j) Additional employment opportunities will be created and highly-qualified human resources will be trained in the information and communication technology sector; and
- k) Domestic television content production development will be promoted.

The attainment of these objectives is important for the national economy.

The European DVB (Digital Video Broadcasting) standard of DTV, which has been chosen for implementation in the Republic of Armenia, can be divided into three standards depending on the distribution environment, including DVB-T (over-ground networks), DVB-S (satellite networks), and DVB-C (cable networks). It has considerable advantages over other systems in the sense that it is the product of integrated design, and its parameters have been unified to the maximum degree possible. The DVB-T system television signal frequency parameters have been harmonized with the

internationally-accepted frequency chart and ensure the air compatibility of the system with the existing analog television transmission, which enables implementation of DTV in the frequency bands allocated to television broadcasting—without changing the frequency chart and without limiting the operating stations.

5. Priority Measures for Implementation of the Digital Television Broadcasting Network.

As digital television broadcasting is implemented, new broadcasting operators, broadcasting networks, and network management systems may be created, and new types of legal, logistical, and business requirements will be posed.

Prior to the implementation of DTV broadcasting, or in the first stage of implementation, the following legislative-legal measures have to be implemented:

- a) The legal framework related to television broadcasting should be studied and, if necessary, relevant legislative amendments made. Such amendments should eliminate potential inconsistencies within the legislation on television broadcasting and define a legal framework for the implementation of DTV broadcasting. It may be necessary to adopt a new law regulating activities in television networks in the context of the public electronic communications network. *Broadcasting and telecommunications legislation is affected through convergence. Both should be studied and maybe one communications law would be the best solution. Legal changes can be made in the form of a new law or amendments to existing ones.*
- b) The social package of television programs should be defined. This package should include the television programs the broadcasting of which is guaranteed by the state. The package should be defined as per the phases of this Plan, separately for the analog and digital broadcasting networks.
- c) A separate set of licensing rules should be adopted on the production and broadcasting of DTV broadcasting content. The licensing system that is currently in place in Armenia does not provide a sufficient legal foundation for efficiently regulating these two categories of the market in terms of making the best possible use of digital television broadcasting technology.

It will be necessary to establish a licensing system that will foster competition in the DTV broadcasting market, which, in turn, will help attract private investment into DTV broadcasting. *Key, very difficult! Ambition is good but the complexity must be recognized.*

When licensing cable television broadcasting operators, it will be necessary to require them to transmit the social package of television programs within the cable television systems in return for a minimal consumer fee to compensate the operators' costs of transmitting such programs. *What now applies for cable? The must-carry is a normal European standard.*

- d) The radio frequency spectrum designated for television broadcasting should be liberalized (converted). The allocation of frequency bands temporarily occupied by other frequency users to DTV broadcasting will make the wide implementation of over-ground DTV broadcasting possible. *Where do the others go?*
- e) The test of terminating analog television broadcasting is the availability of set-top-boxes for 85-90% of the population of the country. Setting criteria and making the public aware of them by the mass media will develop an appropriate public opinion conducive of speedy implementation and cost-effective concurrent broadcasting of analog and digital formats.
- f) The issuing of analog broadcasting licenses should stop in 2006.

Table 1 presents the priority legislative measures needed to implement DTV.

Table 1

#	Legislative/Legal Measures	Deadline
1.	Study the legal framework related to television broadcasting and, if necessary, make relevant legislative amendments. The Law on Television and the Radio should stipulate termination of license issuance to private television and radio broadcast companies from the start of the transition period, i.e. from 2006.	2006-2007
2.	The Government of Armenia to define the social package of television programs and the procedure of broadcasting it.	2007
3.	The Government of Armenia to adopt the draft decision on organizing digital broadcasting in the pilot zone of DTV broadcasting on the basis of the PRTN.	2007
4.	The Government of Armenia to adopt the draft decision on liberalizing the radio frequency bands designed for television broadcasting.	2008
5.	The Government of Armenia to adopt the draft decision on the initial-period criteria and dates of terminating analog television broadcasting.	2010

In addition to the legal measures, a number of logistical and technical measures are necessary to implement DVB DTV broadcasting in the Republic of Armenia.

Table 2 presents the priority logistical-technical measures that need to be carried out in order to implement DVB DTV.

Table 2

#	Logistical-Technical Measure	Deadline
1.	Develop a scheme of DTV broadcasting development in the Republic of Armenia.	2006-2007
2.	Allocate budget funding for DVB DTV broadcasting in the pilot zone.	2007-2008
3.	Define technical specifications on the design and production of set-top-boxes.	2007
4.	Provide budget funding in order to equip the analog TV-sets of socially-vulnerable population of the country with set-top-boxes.	2009-2015
5.	Provide budget funding in order to equip the analog TV-sets of socially-vulnerable population in the pilot zone with set-top-boxes.	2007-2008

6. Means and Methods of Achieving Objectives Identified in the Plan. Assessment of Strengths and DTV Broadcasting Transition Risks.

Although no country in the world has made a complete transition to DTV broadcasting, much experience of concurrent (analog and digital) broadcasting and digital broadcasting has been accumulated.

The experience of European countries shows that the digital transition is confined to a decision of the parliament or government of the country. The period between taking the decision and terminating analog broadcasting differs from country to country and is between 5 and 16 years.

Table 3 presents data on the implementation of DTV broadcasting in a number of European countries.

Table 3

Country	Adoption of Legal Act on Implementation of DTV Broadcasting	Start of Regular DTV Broadcasting	Planned Deactivation of Analog Television Broadcasting
Great Britain	July 1996	November 1998	2012
Sweden	May 1997	September 1999	2008
Spain	October 1998	May 2000	2007
Finland	May 1996	October 2002	2007
Germany	2002	Q1 of 2003	2010
Netherlands	1999	Q4 of 2003	2005
Italy	2001	Q2 of 2004	2006

In order to save resources, all the countries try to reduce the length of the period of concurrent analog-digital broadcasting. After taking the decision, each country has developed a plan covering details of all the aspects of transition to DTV broadcasting.

The experience of European countries shows the following:

- DTV broadcasting should be implemented on the basis of a partnership between the government, television and radio companies, the television program broadcasting network operators, and the industry.
- The transition to DTV broadcasting is financed by central and local budgets. The lower the living standards in a country, the greater the involvement of the state.
- To enhance the motivation of the public, television program producers, television program broadcasting network operators, and industry organizations, it is necessary to develop a set of economic and administrative incentives for the DTV broadcasting market participants.

Taking into account the low living standards of the bulk of the population and the limited financial capacity of private television and radio companies, it would be appropriate for Armenia to implement digital broadcasting in the form of digital broadcasting of a social package of multiplexed television programs—with state support.

All the advantages of transition to DTV broadcasting will materialize once analog broadcasting has been fully terminated and the vacated television frequency bands set aside for digital broadcasting.

The main risk of implementation could be due to a prolonged stage of concurrent broadcasting. ***Yes, but it may be unavoidable unless heavy financing support is given.***

7. Creating DVB-Standard DTV Broadcasting Networks. Recommendations on Implementation Funding.

The modernization of the over-ground broadcasting network of television signals and the transition to digital technology, including the setting-up of digital connection lines and the digitalisation of radio-transmission equipment would mainly be performed by the operator responsible for the operation and development of the television program broadcasting network, using off-budgetary funding, with the state involved in: *Where does the funding come from, so it does not cement the possible monopoly?*

- a) Organizing the transition from analog to DTV;
- b) The broadcasting of the social package of television programs; and
- c) Providing set-top-boxes for the analog TV-sets of socially-vulnerable groups.

The following are the possible options of creating DTV broadcasting networks using digital broadcasting transmission stations and cable television.

Option 1. Network of transmitting digital television broadcasting programs to transponders using microwave links.

This option addresses the peculiarity of Armenia, whereby a rather developed and well-spread network of radio relay links (RRLs) has been created and operates on the relatively small territory of Armenia, which is used to broadcast two-three television programs. The total length of the RRL is 1,497.8 kilometers, which practically passes through all the regional capitals and large settlements of Armenia. In view of technical and financial concerns and the absence of own satellite, the use of the RRL network during the transition to digital technology could generate considerable advantages and economic gains.

The RRL network could be modernized in 3-4 stages, starting in 2007, first in the highway directions of Syunik, Tavush, the northern regions of Armenia, and then, with greater expansion.

The delivery of one social package of television programs to certain settlements that only receive 1-2 satellite programs would be problematic. These settlements are borderline villages, mainly isolated from the key routes, where the construction of analog RRL had been deemed unfeasible. Nevertheless, the social package of television programs can be delivered to the transponders by means of constructing additional microwave links from the main RRLs and installing fiber-optic cable links (FOCLs). The fiber-optic cable option will not only increase the number of television programs received, but also ensure the delivery of electronic communication and data sharing services to the population, not to mention the delivery of strategic information to the civilian

population (such as vital messages in case of emergencies, or information on the condition of roads, the weather forecast, and so on). It will, therefore, facilitate economic progress in the regions of Armenia and the settlement of people in regions.

The total length of such teletransmission links for 218 settlements with a total population of 160,000 will be approximately 1,720 kilometers, including 85 kilometers of RRL and 1,635 kilometers of FOCLs.

For purposes of over-ground DTV broadcasting, it is recommended replacing the analog transponders installed in the existing analog radio television transmission network with digital ones.

Using the existing network would minimize the DTV broadcasting network creation costs.

At present, the state television program broadcasting network operates 192 stations with 12 transponders each with a capacity of more than 1,000 Watts, and 294 smaller-capacity stations. To broadcast a digital package of television programs, these stations could allocate one frequency link each for the IV and V frequency bands designated under the Stockholm Television Broadcasting Plan. When replacing analog television transponders with digital ones, if the same capacity is maintained, the service area might become considerably smaller, and ensuring 100% population coverage would require the additional construction of a certain number of smaller-capacity new digital stations, for which frequencies would need to be allocated.

Subject to the allocation of frequencies, the choice of transponder capacity and service areas would be determined at the stage of elaborating the DTV broadcasting development scheme.

In many settlements, which currently receive 2-4 television programs broadcast by metric link, microwave (decimetric) receiving antennae will need to be installed in order to make the transition to digital broadcasting. *Possibilities in frequency plan? New transmitters? Lots of masts, what do people think?*

In the over-ground DTV broadcasting option, the signals broadcast by television transponders will be used in the collective television reception and cable television systems, in which DVB-T to DVB-C reception converters will need to be installed. The end-user devices connected to collective television reception and cable television systems will need to have digital television receivers or DVB-C set-top-boxes for existing analog TV-sets.

During the period of concurrent analog-digital broadcasting, in view of the scarcity of frequencies and the “overcrowding” of the air, there may be frequency allocation difficulties in Yerevan, which will require a detailed analysis of all the factors related to the transition to DTV. *(Existing frequencies cannot be taken away in mid-period if the broadcaster – or other user – is following licensing conditions, in that case voluntary changes by incentives may be possible)*

Option 2. Creation of a satellite DTV broadcasting network using collective reception and

cable television systems.

This option implies the broadcasting of one social package of television programs in DVB-S standard throughout the country and outside of its territory by means of direct satellite broadcasting of television.

Network building on the basis of direct satellite broadcasting of television, collective reception, and cable television systems will ensure maximum coverage of the territory and population of the country by DTV broadcasting and is not subject to frequency resource limitations. However, considering that broadcasting via collective reception and cable television systems has not yet developed sufficiently in the country, DTV creation via direct satellite broadcasting of television will require additional costs and will not address the networking needs. Under this option, the population would have to purchase satellite receivers and antennae instead of the relatively cheap set-top-boxes.

Cable distribution of satellite? If other parameters better, state could support buying such receivers? These are the kind of issues that may come up at a public discussion.

Option 3. DTV network building with a combination of Options 1 and 2.

Under the combined option of television program signal broadcasting means, digital transponders would be installed in all of the existing analog stations (Option 1).

Using direct satellite broadcasting of television, the social package of television programs would be received via both the existing analog stations and, in remote settlements, additional transponders and collective reception and cable television systems (Option 2).

In this case, the social package of television programs can be delivered to the remote settlements without needing budget funding to construct additional air and cable links.

To ensure the broadcasting of the remaining 2-3 packages of television programs to the regions and to address other regional networking issues, it will be necessary to digitalize the existing RRL network. The creation of a DTV broadcasting network with satellite backup would ensure a great degree of reliability.

This portion of activities under the Plan would be funded by the operators. ***(Willing and able? What guarantees for future licences?)***

Based on the analysis performed, Option 3 is recommended for implementing DTV broadcasting in the Republic of Armenia: after the end of the transition period, Option 3 will support complete realization of all the advantages of DTV broadcasting. ***Public consultation, to get views from at least the involved industry.***

The total cost of implementing a DTV broadcasting network in Armenia is AMD 15 billion, of which AMD 6.4 billion would be funded from the state budget.

The cost estimate does not include the following:

- The cost of private television and radio companies upgrading their studios and hardware; *(unclear how they finance this, will they expect state subsidies?)*
- The cost of hardware for the additional packages of television programs; and
- The cost of digital receivers for the population. . *(This is important!)*

The cost estimates are presented in Table 4.

During the transition stage (2006 and 2007), thorough elaboration and combination of options should be performed in the context of devising the DTV broadcasting development scheme for Armenia and the regional frequency plans for over-ground digital transmitting stations.

The collective television reception systems should be reconstructed by the television broadcasting network operators, which must, in accordance with the procedure stipulated by the Republic of Armenia legislation, obtain licenses to deliver cable television services. It will foster the development of the DTV broadcasting market. These operators should be required to carry out maintenance of household receivers of DTV broadcasting. *Is this in existing licences or will there be a new licensing procedure? Legal certainty and not changing conditions mid-licence.*

8. Recommendations on Provision of Frequencies for Implementation of DTV Broadcasting. Matters Related to Frequency Planning during the Transition to DTV Broadcasting in the Republic of Armenia. An Assessment of the Required Radio Frequency Spectrum Resource.

The management of the radio frequency spectrum and the allocation of radio frequencies for the use of radio-electronic devices is a core function of the state. This function should be exercised both internationally—to protect the national stock of frequencies, and domestically—to support the performance of radio services and the development of new radio technology in the country. To this end, integrated management of all of the administrative and economic factors will be necessary.

An Assessment of the Radio Frequency Spectrum Resource Needed to Ensure Over-ground DTV Broadcasting throughout the Republic of Armenia.

Presently, under the 1961 Stockholm Plan, the following five spectrums of frequencies are used for television broadcasting in Europe:

- I (47-68 MHz);
- II (76-100 MHz)—only in countries of Eastern Europe;
- III (174-230 MHz);
- IV (470-582 MHz); and
- V (582-862 MHz).

The same frequencies are also used in DTV broadcasting. In many countries, surveys carried

out to determine the over-ground digital broadcasting frequencies have shown that the level of industry breakdown is much higher in the I spectrum (47-68 MHz) than in other television spectrums, and may lead to unpredictable breakdown of the digital system. Therefore, the I spectrum is not fit for DTV broadcasting and should continue to be used for the operation of analog systems. The II spectrum (3rd, 4th, and 5th television links) is currently partially used in countries of Eastern Europe and Armenia for audio broadcasting (87.5-100.0 MHz), while the 76-87.5 MHz segment is used for television broadcasting (3rd television link) by mobile and fixed radio services. Therefore, DTV broadcasting in Armenia should be performed in the III, IV, and V spectrums.

To ensure equal accessibility of the radio frequency spectrum for all the countries, the International Telecommunications Union carried out a Regional Radio Communication Conference (RRC-04/06) to develop the international plan of DTV and digital audio broadcasting frequencies in Zone 1 (which includes Armenia, among others).

According to the decisions of the Conference, the III spectrum will be used for DTV (DVB-T) and digital audio (T-DAB) broadcasting. The breakdown between these types of broadcasting will be determined nationally. The IV and V spectrums are set aside for only television broadcasting. The frequency plans devised in the Conference will define the frequency resource of each country for the development of digital broadcasting over the next several decades.

Implementing DTV broadcasting implies a transition from analog to digital, i.e. a transition period during which analog and digital stations will operate concurrently. Analog broadcasting must be protected from interference by newly-installed digital transponders.

During the transition period, the scarcity of frequency links will be felt the most. Presently, a number of areas in the country have already exhausted the available frequency resource, and new links cannot be allocated for analog broadcasting; links for DTV broadcasting can be allocated with significant limitation of the transmitted capacity. Therefore, conversion of the spectrum is decisive.

Special attention should be paid to the possibility of using the links that are currently occupied by organizations that do not broadcast TV programs.

During the transition stage of analog-digital over-ground television broadcasting co-existence, it would be realistic to install digital transponders in existing radio-television transmission centers, because this approach would make use of the existing television network infrastructure and the reception antenna systems, and considerably reduce the amount of required investments.

The national distribution of radio frequency bands in Armenia is considerably different from the international one approved by the International Telecommunication Union Radio Communication Statute that prescribes the most favorable conditions for implementing radio communication and broadcasting technologies. These differences and their consequences in Armenia are due to the fact that the radio frequency spectrum is mainly used for military and special-purpose radio-electronic devices. ***This issue is important and relevant parties must be involved. The Ministry of***

Defence and military may otherwise stop a good plan.

There is only one solution left in this situation, which is to create frequency charts for DTV broadcasting, using also the links that are currently not accessible. This option would enable international-level protection of the frequency resource earmarked for DTV broadcasting for future use by broadcast services. It is necessary to realize that the use of such links will only be possible after conversion measures are implemented.

In view of the current frequency limitations, the planning process has included a preliminary review of the possible allocation of one DTV broadcasting link in each over-ground analog television transmission station in Armenia.

In certain instances, significant shrinking of the DTV transponder service areas makes their installation economically unsound. After conversion of the radio frequency spectrum, it will be possible to allocate frequencies to larger-capacity DTV transponders, and the discrepancy between analog and DTV transponder service areas may be reduced. After analog broadcasting is terminated and the converted II spectrum television links are set aside for DTV broadcasting, DTV broadcasting service areas compatible with those of analog stations may be implemented.

Considering the scarcity of frequency links, it will be necessary during the transition period to stop allocating radio and television broadcasting licenses to private television and radio companies, until the frequency links needed to broadcast the social package of television programs in a given areas are set aside. ***Renewal of existing licences? A moratorium as such is OK but it should not be too long and never arbitrary, legal certainty.***

An Assessment of the Orbital Frequency Resource of the Radio Spectrum and Development Prospects.

To implement the Plan, it is necessary to have adequate orbital frequency resources. Broadcasting of television programs is normally carried out using spacecrafts (satellites) providing fixed satellite services. According to this Plan, it will be possible to broadcast television programs via satellites providing satellite broadcasting services—for the benefit of collective television reception systems or individual users.

According to international coordination treaties, the Republic of Armenia communications administration has received two orbital positions in the spectrum designated for satellite broadcasting services (on the geostationary orbit). Within the first position, there are 10 links for television broadcasting. The second position is for fixed satellite services. ***Must take them into use, no permanent reservation as such.***

9. Logistical and Technical Measures Needed to Implement DVB DTV Broadcasting in the Republic of Armenia

The following logistical and technical measures should be carried out in the Republic of Armenia in order to implement DVB DTV broadcasting:

- Develop a DTV broadcasting development scheme to end in 2008;
- Develop technical regulations and appropriate standards for the production of set-top-boxes, taking into account that, in addition to foreign-produced ones, set-top-boxes can also be produced in Armenia. The development of such standards should end in 2007; ***European standards, not make own***
- Provide set-top-boxes to the population of the pilot zone to receive television programs in the over-ground digital air broadcasting system. This measure should be carried out during 2007 and 2008, until 100% coverage is achieved; and ***(funding for this including administrative costs?)***
- During 2007-2012, allocate budget funding in order to provide set-top-boxes to the socially-vulnerable population. ***(funding for this including administrative costs?)***

During the transition to digital broadcasting, network operators and other stakeholders can cooperate actively with leading foreign companies, such as Thales Broadcast & Multimedia SA, NEC Corporation, Harris Corporation, Telefunken, Tandberg Television Ltd, Scopus Network Technologies Ltd., Rohde & Schwarz GmbH, Technosystem S.p.A., Tesla, Screen Service, Texas Instruments, Philips, and the like.

This cooperation could take different forms, including:

- Procurement of hardware produced by such foreign firms;
- Procurement of technological equipment produced by such foreign firms;
- Procurement of a pool of electronic components produced by such foreign firms;
- Creation of joint ventures; and
- Mutual counseling and experience sharing. ***(Any contacts? Any interest? Not promise them what cannot be promised. Also note the competition law aspects of mentioning firms by name in the plan.)***

10. Plan Implementation Phases and Timeline

The Plan will be carried out in four phases, including a preparatory phase and three main phases.

The Preparatory Phase will include 2006 and 2007.

Phase 1: 2007-2008.

Phase 2: 2009-2012.

Phase 3: 2013-2015.

The Preparatory Phase will encompass measures the performance of which will allow starting the implementation of DTV broadcasting in 2007.

During Phase 1 (2007-2008), the installation of DTV transponders in the pilot area will start, using the infrastructure of the existing analog over-ground television broadcasting network. Over-ground DTV broadcasting and the distribution of the television program signals of 4-5 public and private television companies in the pilot area will start.

The pilot programme of the plan is quite short, but on the other hand it is good not to have too long a period of simultaneous broadcasting.

During Phase 2 (2009-2012), DTV broadcasting would start in the cities of Yerevan and Gyumri, which will make DTV broadcasting accessible for 65% of Armenia's population. By the end of Phase 2, the whole population of these two cities will have set-top-boxes in place. During this period, the implementation of over-ground DTV broadcasting in accordance with the programs of television companies offering digital broadcasting services will continue. The private television programs will start their transition to over-ground digital broadcasting, including the use of more efficient compression methods and television signal transmission.

During Phase 3 (2013-2015), analog broadcasting will stop, and the television programs of private television companies throughout the Republic of Armenia will complete their transition to over-ground digital broadcasting.

11. Assessment of the Expected Impact of the Plan

As a result of implementing the Plan, necessary preconditions will be created for speedy implementation and wide spreading of DTV broadcasting in the Republic of Armenia, including all the categories of the DVB standard (DVB-T, including its DVB-H sub-category for mobile receivers, as well as DVB-S and DVB-C).

The implementation of the Plan will allow:

- Achieving television program broadcasting network development indicators comparable to those of European countries;
- Eliminating the existing inequalities in the field of access to television broadcasting and creating necessary conditions for the exercise by the Republic of Armenia citizens of their constitutional right to freedom of information; ***This depends a lot on what is on the channels!***
- Ensuring further development of the competitive environment in the sphere of television broadcasting services;

- Modernizing the television program broadcasting network to a state-of-the-art and economically sound network with potential of development in a free market; and
- Improving the investment appeal of the sector and increasing the government’s tax collection from the television broadcasting services sector. ***Allow them money for innovation and investment, especially early, not count too much on money from them!***

12. Sources of Funding for the Plan

The Plan could be financed by both the state and government-guaranteed investments of private television companies. During the transition period, there could be arrangements for indirect financial support, including, for instance, tax breaks to the participants of the Plan, government loans, and privatization of state share. ***State aid rules!***

Table 4.

#	Activity, Measure	Dates	Costs, AMD million		
			Total	State budget	Other sources
1.	Elaborate DTV broadcasting development scheme for the Republic of Armenia	2006-2007	50.0	50.0	-
2.	<p>Create pilot DVB-T digital broadcasting area in Vanadzor (with 4 television programs), including:</p> <p>Procure and install 200-Watt DVB-T digital transponder and antenna-cable system</p> <p>Procure and install signal digitalisation systems (codes and multiplexes)</p> <p>Provide 6,000 free-of-charge set-top-boxes to the most vulnerable segments of the population</p>	2007-2008	136.8	136.8	-
			24.3	24.3	-
			18.0	18.0	-
			94.5	94.5	-
3.	Build satellite transmission station to ensure satellite broadcasting of the social package of television programs	2010	120.0	120.0	-
4.	Lease satellite capacity to ensure satellite broadcasting of the social package of television programs	Starting from 2011	540.0 per annum	540.0 per annum	-

5.	Procure and install one DVB-T digital transponder and accessories of relevant capacity for each of 200 television stations for purposes of broadcasting the social package of television programs (a total of 191 operating stations), including: Three 5,000-Watt transponders (AMD 197 million each) Four 1,000-Watt transponders (AMD 47 million each) 48 100-Watt transponders (AMD 12.6 million each) 136 10-Watt transponders (AMD 7.7 million each) Nine additional 10-Watt transponders (AMD 7.7 million each)	2009-2015	2,500.0	2,500.0	-
			591.0	591.0	-
			188.0	188.0	-
			604.8	604.8	-
			1 047.2	1 047.2	-
			69.0	69.0	-
6.	Procure and install one DVB-S satellite receiving systems for 200 receiving stations for purposes of receiving the social package of television programs	2009-2015	63.0	63.0	-
7.	Procure and donate to most vulnerable social groups 210,000 set-top-boxes	2009-2015	3,307.5	3,307.5	-
8.	Digitalize existing radio relay links with a total length of 1,497.8 kilometers in order to ensure broadcasting of 2-3 digital packages to the regions and to address other networking needs in the regions, including:	2009-2015	3,700.0	-	3,700.0
	Highway radio relay links	2009-2012	2,700.0	-	2,700.0
	Branches	2013-2015	840.0	-	840.0
	Interactive networks	2013-2015	160.0	-	160.0

9.	Install radio relay or fiber-optic links in borderline settlements that are mainly detached from communication routes, including: Radio relay links (85 km) Fiber-optic lines (1,720 km)	2013-2015	4,300.0	-	4,300.0
			240.0	-	240.0
			4,060.0	-	4,060.0
10.	Procure and install DVB-T digital transponders and accessories of appropriate capacity in the regional capitals and large settlements for broadcasting of additional private television programs, including: Seven 1,000-Watt transponders (AMD 47 million each) 22 100-Watt transponders (AMD 12.6 million each)	2013-2015	606.2	-	606.2
			329.0	-	329.0
			277.2	-	277.2
11.	Arrange cable networks for collective reception of social package of television programs in the most-densely constructed parts of Yerevan (80 systems, AMD 2.25 million each)	2013-2015	180.0	-	180.0
12.	Procure and install, in central stations of cable television broadcasting, professional receivers for the broadcasting of the social package of television programs (30 receivers, AMD 0.7 million each)	2013-2015	21.0	-	21.0
13.	Training of human resources abroad	2007-2012	34.0	34.0	-
TOTAL for 2007-2015				AMD 15,018.5 million	The calculation does not include the satellite capacity lease fee (AMD 540 million per annum)
Of which: State budget-funded				AMD 6,211.3 million	
Other sources				AMD 8,807.2 million	

Table 4.1

#	Implementation Phase	Dates	Costs, AMD million		
			Total	State budget	Other sources
Preparatory Phase		2006-2007	50.0	50.0	-
1.	Elaborate DTV broadcasting development scheme for the Republic of Armenia		50.0	50.0	-
Phase 1		2007-2008	152.8	152.8	-
2.	Create pilot DVB-T digital broadcasting area in Vanadzor (with 4 television programs)		136.8	136.8	-
3.	Training of human resources abroad		16.0	16.0	-
Phase 2		2009-2012	5,381.8	2,681.8	2,700.0
4.	Procure and install two 5,000-Watt DVB-T digital transponder and accessories for broadcasting the social package of television programs—one transponder in each of Yerevan and Gyumri		394.0	394.0	-
5.	Procure and donate 137,000 set-top-boxes to the most vulnerable segments of the population		2,149.8	2,149.8	-
6.	Build satellite transmitting station to ensure satellite broadcasting of the social package of television programs		120.0	120.0	-
7.	Digitalize existing highway radio relay links		2,700.0	-	2,700.0
8.	Training of human resources abroad		18.0	18.0	-
Phase 3		2013-2015	9,433.9	3,506.7	5,927.2

9.	Procure and install one DVB-T digital transponder and accessories in each of 189 television stations for purposes of broadcasting the social package of television programs		2,106.0	2,106.0	-
10.	Procure and install DVB-S satellite reception systems in 200 television stations for purposes of receiving the social package of television programs		63.0	63.0	-
11.	Procure and donate 73,000 set-top-boxes to the most vulnerable segments of the population		1,157.7	1,157.7	-
12.	Digitalize radio relay link branches and arrange interactive networks		1,000.0	-	1,000.0
13.	Install radio relay or fiber-optic links in borderline settlements detached from the main communication routes		4,300.0	-	4,300.0
14.	Procure and install DVB-T digital transponders and accessories of appropriate capacity in the regional capitals and large settlements for broadcasting of additional private television programs		606.2	-	606.2
15.	Arrange cable networks for collective reception of social package of television programs in the most-densely constructed parts of Yerevan		180.0	180.0	-
16.	Install, in central stations of cable television broadcasting, professional receivers for the broadcasting of the social package of television programs		21.0	-	21.0
The calculation does not include the satellite capacity lease fee (AMD 540 million per annum)					

III. Radio (Audio) Broadcasting

13. An Overview of the Current State of the Radio Broadcasting System in the Republic of Armenia. Population Coverage of Radio Broadcasting.

In the Republic of Armenia, radio broadcasting is performed in the spectrums of ultra short waves (USW), short waves (SW), medium waves (MW), and long waves (LW). One program of the Public Radio Company is broadcast abroad by satellite.

There is wire radio in the capital city and in some of the regions.

Population coverage of the Public Radio Company's programs via the FM network is 92%.

According to a decree of the Republic of Armenia Government, another 65 small-capacity transponders will be installed before yearend 2006, which will ensure radio program coverage of the whole population of the country.

Population coverage of private radio companies' programs is 79.5%.

The broadcasting of the Public Radio Company's programs in Armenia is organized by 18 transponders of 250÷1,000 Watts, which are installed in 17 stations of the national radio program broadcasting network.

The broadcasting of the signal is organized by over-ground links and satellite reception.

Indicators of population coverage of radio broadcasting are presented in Table 9.

14. Goals and Objectives. Key Principles of Implementing a Digital Air Radio Program Broadcasting Network.

The goals of the country's broadcasters in terms of assessing digital air broadcasting of radio programs are same as those of DTV broadcasting.

The goals include the following: ensuring wider coverage of the population, increasing the number of radio programs, improving quality, and making additional services available.

To achieve these goals in Armenia, to ensure international compatibility under the frequency allocation, and to attain wider use of European technology, the T-DAB (Digital Audio Broadcasting) system would be appropriate to implement in the course of the transition from analog to digital radio broadcasting.

15. Priority Measures for Implementation of Digital Radio Broadcasting.

The state-level legislative and administrative measures needed to implement digital radio broadcasting are similar to those specified in Section 5 and Tables 1 and 2 of this Plan.

16. Creating Digital Radio Broadcasting Networks in T-DAB Standard.

The modernization of the television program broadcasting network via over-ground telecommunication routes and satellite reception will create technical opportunities for the broadcasting of radio programs, as well (the links would ensure the broadcasting of both television and radio programs).

In this case, it is recommended to replace analog transponders with digital ones for purposes of over-ground digital radio broadcasting. Satellite reception requires the installation of 82 radio decoders.

Depending on the allocation of frequencies, the choice of radio decoders and the coverage zone will be determined at the stage of elaborating the digital radio broadcasting development scheme.

17. Source of Funding for the Plan.

The Plan could be financed by both the state and government-guaranteed investments of private radio companies. To attract investor funds, it will be necessary to apply arrangements of indirect financial support in order to create favorable conditions for the activities of private operators offering paid interactive services. The current business form of the state radio program broadcasting network operator, despite its strong economic potential, cannot support major development.

A financial assessment of the creation of a digital broadcasting network in Armenia is presented in Tables 5 and 6.

Table 5.

#	Activity, Measure	Dates	Cost, AMD million		
			State budget	Other sources	Total
1.	Elaborate digital radio broadcasting development scheme for the Republic of Armenia	2006-2007	15.0	-	15.0
2.	Procure and install one T-DAB digital radio transponder and accessories of appropriate capacity in each of 82 radio stations of the country for purposes of broadcasting the social package of radio programs, including: One 2,000-Watt transponder Five 1,000-Watt transponders (AMD 29.7 million each) 20 250-Watt transponders (AMD 27.9 million each) 56 20-Watt transponders (AMD 7.4 million each)	2009-2015	1,156.6	-	1,156.6
			35.7	-	35.7
			148.5	-	148.5
			558.0	-	558.0
			414.4	-	414.4
3.	Procure and install in 66 stations the satellite reception systems of the S-DAB standard for reception of the social package of radio programs	2009-2015	20.8	-	20.8
4.	Procure and install T-DAB digital transponders and accessories of appropriate capacity in the regional capitals and large settlements for broadcasting of additional private radio programs, including: Five 1,000-Watt transponders (AMD 29.7 million each) 11 250- Watt transponders (AMD 27.9 million each)	2013-2015	-	455.4	455.4
			-	148.5	148.5
			-	306.9	306.9
TOTAL during 2007-2015				AMD 1,647.8 million	
Of which: State budget-funded				AMD 1,192.4 million	
Other sources				AMD 455.4 million	

Table 6.

#	Implementation Phase	Dates	Cost, AMD million		
			Total	State budget	Other sources
Preparatory Phase		2006-2007	15.0	15.0	-
1.	Elaborate digital radio broadcasting development scheme for the Republic of Armenia		15.0	15.0	-
Phase 1		2009-2010	35.7	35.7	-
2.	Procure and install in Yerevan one 2,000-Watt T-DAB digital radio transponder and accessories for purposes of broadcasting the social package of radio programs		35.7	35.7	-
Phase 2		2011-2012	709.7	709.7	-
3.	Procure and install one T-DAB digital radio transponder and accessories of 250-1,000 Watts in each of 25 stations for purposes of broadcasting the social package of radio programs		706.5	706.5	-
4.	Procure and install DVB-S satellite reception systems in 10 key stations for purposes of receiving the social package of radio programs		3.2	3.2	-
Phase 3		2013-2015	887.4	432.0	455.4
5.	Procure and install one T-DAB digital radio transponder and accessories of 20 Watts in each of 56 stations for purposes of broadcasting the social package of radio programs		414.4	414.4	-
6.	Procure and install DVB-S satellite reception systems in 56 stations for purposes of receiving the social package of radio programs		17.6	17.6	-
7.	Procure and install in regional capitals and large settlements T-DAB digital radio transponders and accessories of appropriate capacity for purposes of broadcasting additional private radio programs		455.4	-	455.4

Table 7.

Statistics

On TV Channels Coverage, by Settlements and Population of Armenia, as of January 1, 2006

#	Name of TV Program	Total coverage, %		Urban, %		Rural, %	
		Settlements	Population	Settlements	Population	Settlements	Population
1.	H1	100	99.8	100	99.9	100	99.7
2.	H2	74.8	93.8	93.7	98.5	73.9	85.6
3.	RTR-Planeta	76.5	93.2	93.7	98.7	75.6	85.3
4.	1 st Russian Channel	57.5	87.9	75.0	94.2	56.6	76.8
5.	ALM	43.5	69.5	56.3	80.0	41.8	59.3
6.	Armenia	42.5	68.9	62.5	88.5	39.3	53.6
7.	Shant	32.4	59.1	35.4	76.9	31.2	42.3
8.	Nor Alik	30.2	53.5	29.1	70.3	29.4	41.8
9.	AR	24.8	49.3	20.8	61.9	25.0	39.3
10.	Local (Marz) channels	11.0	59.8	50.0	88.7	9.2	9.4

In some cases, due to the lack of state-of-the-art TV-sets and appropriate receiving antennae, the population gets substandard reception of TV programs.

Table 8.

Statistics

On Coverage of Settlements and Population of Armenia, as of January 1, 2006

#	Number of TV programs	Total coverage, %		Urban, %		Rural, %	
		Settlements	Population	Settlements	Population	Settlements	Population
1.	1 and more (Annex 5)	100	99.8	100	99.9	100	99.7
2.	2 and more (Annex 6)	87.2	97.4	100	99.9	86.5	92.8
3.	3 and more (Annex 7)	78.0	95.1	91.7	99.5	77.5	87.3
4.	4 and more (Annex 8)	59.1	88.4	83.3	96.3	57.8	74.8
5.	5 and more (Annex 9)	52.0	85.8	72.9	94.6	50.9	70.9

In some cases, due to the lack of state-of-the-art TV-sets and appropriate receiving antennae, the population gets substandard reception of TV programs

*Statistics*On Coverage of Settlements and Population of Armenia
As of January 1, 2006

Number of radio programs (data on FM coverage of settlements and population of Armenia)	Settlements, %	Population, %
1 and more	72.9	92.0
2 and more	55.8	79.5
3 and more	32.1	67.3

Statistics

On Coverage by Marz Settlements and Population

1 program and more

Marz (region)	Settlements, %			Population, %		
	Total	Of which		Total	Of which	
		Urban	Rural		Urban	Rural
Total Armenia	100	100	100	99.8	99.9	99.7
Aragatsotn	100	100	100	99.3	99.7	99.2
Ararat	100	100	100	99.9	99.9	99.9
Armavir	100	100	100	99.9	99.9	99.9
Kotayk	100	100	100	99.8	99.9	99.8
Shirak	100	100	100	99.7	99.9	99.4
Gegharkunik	100	100	100	99.8	99.9	99.8
Lori	100	100	100	99.9	99.9	99.9
Tavush	100	100	100	99.8	99.9	99.7
Vayotz Dzor	100	100	100	98.2	98.5	98.0
Syunik	100	100	100	99.4	99.7	98.5
Yerevan	100	100	100	99.9	99.9	-

Statistics

On Coverage by Marz Settlements and Population

2 programs and more

Marz (region)	Settlements, %			Population, %		
	Total	Of which		Total	Of which	
		Urban	Rural		Urban	Rural
Total Armenia	87.2	100	86.5	97.4	99.9	92.8
Aragatsotn	95.8	100	95.7	95.8	99.7	94.5
Ararat	100	100	100	99.9	99.9	99.9
Armavir	100	100	100	99.9	99.9	99.9
Kotayk	97.1	100	96.8	99.7	99.9	99.7
Shirak	89.3	100	89.0	95.8	99.9	89.1
Gegharkunik	92.9	100	92.5	96.7	99.9	95.0
Lori	79.8	100	78.5	95.5	99.9	89.0
Tavush	84.6	100	83.6	91.6	99.9	86.6
Vayotz Dzor	66.7	100	64.8	83.0	98.5	74.7
Syunik	66.0	100	64.0	86.5	99.7	58.0
Yerevan	100	100	-	99.9	99.9	-

Statistics

On Coverage by Marz Settlements and Population

3 programs and more

Marz (region)	Settlements, %			Population, %		
	Total	Of which		Total	Of which	
		Urban	Rural		Urban	Rural
Total Armenia	78.0	91.7	77.5	95.1	99.5	87.3
Aragatsotn	95.8	100	95.7	95.8	99.7	94.5
Ararat	99.0	100	98.9	99.5	99.9	99.3
Armavir	98.0	100	97.9	99.4	99.9	99.1
Kotayk	92.9	100	92.0	96.3	99.9	91.5
Shirak	86.3	100	85.9	95.5	99.9	88.4
Gegharkunik	77.6	100	76.3	91.3	99.9	87.0
Lori	64.3	62.5	64.5	88.2	96.9	75.4
Tavush	75.4	100	73.8	84.8	99.9	75.6
Vayots Dzor	52.6	100	50.0	72.4	98.5	58.3
Syunik	40.9	85.7	37.6	78.0	95.1	41.4
Yerevan	100	100	-	99.9	99.9	-

Statistics

On Coverage by Marz Settlements and Population

4 programs and more

Marz (region)	Settlements, %			Population, %		
	Total	Of which		Total	Of which	
		Urban	Rural		Urban	Rural
<i>Total Armenia</i>	59.1	83.3	57.8	88.4	96.3	74.8
Aragatsotn	78.3	66.7	78.6	68.6	36.9	78.3
Ararat	88.8	100	88.3	97.4	99.9	96.4
Armavir	98.0	100	97.9	99.4	99.9	99.1
Kotayk	78.6	85.7	77.8	83.2	83.7	82.4
Shirak	54.2	100	53.1	90.5	99.9	75.5
Gegharkunik	50.0	80.0	48.4	78.6	83.9	76.0
Lori	38.8	62.5	37.2	75.7	96.9	44.6
Tavush	23.0	75.0	19.7	49.0	82.5	28.7
Vayotz Dzor	38.6	100	35.2	61.8	98.5	42.0
Syunik	34.8	85.7	32.0	76.3	95.1	35.8
Yerevan	100	100	-	99.9	99.9	-

Statistics
On Coverage by Marz Settlements and Population

5 programs and more

Marz (region)	Settlements, %			Population, %		
	Total	Of which		Total	Of which	
		Urban	Rural		Urban	Rural
Total Armenia	52.0	72.9	50.9	85.8	94.6	70.9
Aragatsotn	35.0	0	64.1	32.9	0	43.2
Ararat	88.8	100	88.3	97.4	99.9	96.4
Armavir	98.0	100	97.9	99.4	99.9	99.1
Kotayk	75.7	85.7	74.6	81.8	83.7	79.3
Shirak	51.9	100	50.8	89.9	99.9	74.0
Gegharkunik	48.0	60.0	47.3	75.5	75.7	75.4
Lori	38.8	62.5	37.2	75.7	96.9	44.6
Tavush	23.0	75.0	19.7	49.0	82.5	28.7
Vayots Dzor	24.6	66.7	22.2	48.3	67.7	37.9
Syunik	32.6	71.4	30.4	70.3	87.0	34.4
Yerevan	100	100	-	99.9	99.9	-

Good thorough statistics but the roll-out plan for digital and how it fits with this reality is less clear?

Selection of Relevant material

Council of Europe

Council of Europe Recommendation R (96)10 of the Committee of Ministers to Member States on the guarantee of the independence of public service broadcasting

Council of Europe Recommendation R (99)1 of the Committee of Ministers to Member States on media pluralism

Council of Europe Recommendation R (2003)9 of the Committee of Ministers to Member States on measures to promote the democratic and social contribution of digital broadcasting.

European Convention on Trans-frontier Television, 5 May 1989

European Union

Directive 2002/19/EC, Access Directive

Directive 2002/20/EC, Authorisation Directive

Directive 2002/21/EC, Framework Directive

Directive 2002/22/EC, Universal Service Directive

Directive 2002/77/EC on competition in the markets for electronic communications networks and services

Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on accelerating the transition from analogue to digital broadcasting, COM(2005)204 final, Brussels 24.5.2005.

Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the transition from analogue to digital broadcasting (from digital “switchover” to analogue “switch-off”), COM(2003)541 final, Brussels 17.9.2003.

European Broadcasting Union

EBU Newsletter Diffusion online 2003/4

Comments by the EBU on the Commission Staff Working Paper on the Interoperability of Digital Interactive Television Services, 30 April 2004

OSCE

OSCE Representative on Freedom of the Media Miklos Harazsti “The State of Media Freedom in Armenia. Observations and Recommendations”, 26 July 2006

OSCE with the European Radiocommunications Office “Comments to the draft Digital Broadcasting Development Strategy in the Republic of Albania”, 21 September 2004

Other

Natali Helberger “Access to technical bottleneck facilities: the new European approach” in *Communications & Strategies* 2002-2, p. 33.

Natali Helberger “Controlling Access to Content - Regulating Conditional Access in Digital Broadcasting”, *Information Law Series* 15, The Hague, Kluwer Law International (2005).

Eve Salomon *Guidelines for Broadcasting Regulation*, UNESCO & Commonwealth Broadcasting Association (2006)

UNESCO Workshop at World Summit on Information Society in Geneva December 2003

Lithuanian Government Model for the Introduction of Digital Television” 2004 available at <http://merlin.obs.coe.int>.

Hungarian draft “Act on the Rules of Digital Broadcast Transmission”, January 2006 - available at <http://merlin.obs.coe.int>.

Strategy of the Council of Ministers of Poland of 4 May 2005 for the switch-over from analogue to digital technology on terrestrial television - available at <http://merlin.obs.coe.int>.

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www.epra.org

www.digitaltelevision.gov.uk

www.ofcom.org.uk

www.digitv.fi

www.digitv.ee

www.digitaltvovergangen.se