

**EXPLORING THE WAYS TO CREATE
A NATIONAL BROADBAND POLICY:
A CRITICAL DISCUSSION ON THE MAIN DRAWBACKS
AND POSSIBLE MEASURES FOR TURKEY**

*ULUSAL GENİŞBANT POLİTİKASI OLUŞTURULMASINA YÖNELİK
YÖNTEMLERİN ANALİZİ: TÜRKİYE'YE ÖZGÜ ANA SORUNLAR İLE
OLASI TEDBİRLERE İLİŞKİN ELEŞTİREL BİR TARTIŞMA*

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Abstract

How to devise and implement a national broadband policy has been an entrenched part of developed countries' agendas and information society programmes during the last decade. In fact, broadband is not only seen as one of the by-products of convergence but also deemed as the path to increase a country's global competitiveness as well as welfare accumulation. As many Western countries put broadband policies at the top of their state-funding schemes and ICT strategies whereby critical responsibilities are assumed by state agencies, same collaborations and efforts similarly rely on the competent authorities in Turkey, e.g. Ministry of Transport, Regulatory Body (ICTA) and Competition Authority (CA). Viewing this fact as the baseline, this study firstly traces back to Turkey's liberalisation history, development of broadband penetration and access models; subsequently explains regulatory landscape including the cornerstone decisions and implementations, e.g. those of ICTA (formerly, TA) and CA; and finally elaborates the possible actions and measures surrounding successful examples across the globe. It is ultimately

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proposed that, both infrastructure and service based competition should be encouraged in liaison with investment-spurring governmental projects. Out of the possible policy tools, allocation of a portion of general budget or universal service funds to broadband deployments, making ample capacities of utilities available to broadband operators, encouraging public-private cooperation and enabling municipalities to build broadband infrastructure are given a special emphasis. After a variety of measures being put forward, it is found that making a multi-dimensional plan entailing all the relevant parties (e.g. municipalities, universities, public utilities), delegating a task force for implementing the plan, and combination of flexible business models with fund allocation schemes are the main success factors which Turkey would effectively adapt to itself in line with many of the developed countries. Stronger coordination among competent authorities themselves and with operators, and gradual forbearance from regulation of the entrenched models along with the accelerated roll-out of LLU and other emerging broadband platforms, e.g. FTTx are the other strategic behaviours suggested hereby. Last but not least, public debate over creation of national broadband policy and projects should be maintained on the country agenda, attracting more participants to discuss how to build and implement a sound broadband strategy in Turkey.

Keywords: *ICT (Information and Communications Technologies), National Broadband Policy, Competition, Regulation, Turkey, DSL, Local Loop Unbundling, FTTx.*

Öz

Ulusal bir genişbant politikasının nasıl hazırlanacağı ve uygulanacağı hususu son on yıllık dönem boyunca gelişmiş ülkelerin gündemlerinin ve bilgi toplumu programlarının ayrılmaz bir parçasını teşkil etmiştir. Aslında genişbant, yalnızca yakınsamanın bir yan ürünü olarak görülmemekte, aynı zamanda ülkelerin küresel rekabet gücünün ve toplam refahın artmasını sağlayan bir yol olarak değerlendirilmektedir. Birçok Batı ülkesinin genişbant projelerini, kamu kuruluşlarının kritik sorumluluklar üstlendiği devlet finansman programlarının ve BİT (Bilgi ve İletişim Teknolojileri) stratejilerinin en üst noktasına yerleştirdiği de dikkate alındığında, aynı nitelikli işbirliği ve gayretlerin Türkiye'deki yetkili kurumlara da (ör: Ulaştırma Bakanlığı, Bilgi Teknolojileri ve İletişim Kurumu (BTK) ve Rekabet Kurumu (RK)) düştüğü değerlendirilmektedir. Bu gerçek başlangıç noktası kabul edilerek, bu çalışmada ilk olarak Türkiye'nin serbestleşme sürecinin, genişbant penetrasyonu ve erişim modellerinin gelişiminin izleri sürülmekte; sonrasında (BTK (önceki adıyla TK) ve RK tarafından tesis edilen) temel karar ve uygulamalar da dâhil olmak üzere düzenleyici ortam açıklanmakta; nihai

olarak dünya çapındaki başarılı örnekler göz önünde bulundurularak olası eylem ve tedbirler üzerinde durulmaktadır. Nihai olarak; altyapı ve hizmet ekseninde rekabetin, yatırımı özendirici devlet projeleri ile yakın ilişkili biçimde teşviki önerilmektedir. Olası politika araçları arasında, genişbant yatırımlarına genel bütçe veya evrensel hizmet fonundan pay ayrılması, kamu tekeli niteliğindeki kuruluşlara ait fazla kapasitenin genişbant işletmecilerinin erişimine açılması, kamu-özel sektör işbirliğinin teşvik edilmesi ve belediyelere genişbant altyapısı inşa etme hususunda imkân tanınmasına özel bir önem atfedilmiştir. Bir takım tedbirler ortaya konulduktan sonra, ilgili tüm tarafların (ör: belediyeler, üniversiteler, kamu tekelleri) katılım sağladığı çok boyutlu bir plan yapılmasının, planın uygulanmasında bir görev ekibinin yetkili kılınmasının ve fon dağıtım planlarıyla esnek iş modellerinin kombinasyonunun, Türkiye'nin birçok gelişmiş ülkeye paralel olarak etkin bir şekilde esas alabileceği temel başarı faktörleri olduğu sonucuna ulaşılmıştır. Yetkili kuruluşların işletmecilerle ve kendi aralarında daha güçlü koordinasyonun ve öteden beri kullanılan modellerin düzenlenmesinin yayılımı hızlandırılmış YAPA ile FTTx gibi yeni gelişen genişbant platformlarına kademeli bir şekilde yerini terketmesi, bu kapsamda önerilen diğer stratejik yaklaşımlardır. Son, fakat aynı derecede önemli bir husus olarak; ulusal genişbant politikası ve projeleri oluşturulmasına ilişkin tartışmalar, Türkiye'de nasıl sağlam bir genişbant stratejisi oluşturulması ve uygulanması gerektiği konusunun daha geniş bir katılımı ile tartışılmasını sağlayacak şekilde ülkenin gündeminde kalmaya devam etmelidir.

Anahtar Kelimeler: BİT (Bilgi ve İletişim Teknolojileri), Ulusal Genişbant Politikası, Rekabet, Regülasyon, Türkiye, DSL, Yerel Ağın Paylaşımına Açılması, FTTx.

1. Introduction: Following the Footprints of a Broadband Blueprint

How to devise and implement a broadband policy is to be considered one of the priorities of a country that aspires to be a member of the global information society rather than solely being a beneficiary. It is apparent that the degree to which a nation is closer to an information society could be evaluated by looking its number of Internet users, the most prevailing Internet speed/price and availability of IP-based (e.g. IPTV and triple play) services and networks. Broadband¹ is a critical enabler for the use of computer-based applications that

¹ There is no universally accepted definition of 'broadband' and there are various definitions followed by different countries. Notwithstanding, it is generally agreed that it is used to mean services considerably faster than ISDN. According to OECD, the technical term 'broadband' includes Internet connectivity which is capable of download speeds of at least 256 Kbps, see http://www.oecd.org/document/46/0,3343,en_2649_34225_39575598_1_1_1_1,00.html.

need to communicate,² having a spill-over effect over the growth of employment (e.g. real estate, renting and business activities), education (e.g. distance education programmes), health services (e.g. telemedicine), etc. Adoption of broadband-enabled IT applications can thus affect the economy by changing the behaviours and productivity of both firms and individuals.³ Empirical studies and reports examining the interrelation between broadband performance (e.g. penetration rate) and economic growth rate (e.g. gross domestic product) demonstrate a positive correlation between them.⁴ Not only global competitiveness but also country-wide societal and developments, e.g. e-commerce, teleworking, increase in (high-tech industrial) economic activities are in close liaison with broadband availability, usage and speed.⁵ All these

last visited in 22.03.2010.

² Measuring Broadbands Economic Impact (Final Report), (2006) Prepared for the U.S. Department of Commerce, Economic Development Administration National Technical Assistance, Training, Research, and Evaluation Project #99-07-13829, <http://www.eda.gov/Research/ResearchReports.xml>, last visited by 22.03.2010, p. 7.

³ *Ibid.*

⁴ The results of a report prepared for the U.S. Department of Commerce support the view that broadband access does enhance economic growth and performance, and that the assumed economic impacts of broadband are real and measurable (Measuring Broadbands Economic Impact (Final Report), 2006, p. 2). The analysis conducted for this study found that between 1998 and 2002, communities in which mass-market broadband was available by December 1999 experienced more rapid growth in employment, the number of businesses overall, and businesses in IT-intensive sectors, relative to comparable communities without broadband at that time. For instance, according to the available results job growth rates (5.2% between 1998 and 2002) in the overall sample of communities tested is attributed to a 1% increase in broadband availability, which is a noticeably large impact (*Ibid.*, p. 4). Another report prepared for the European Commission evaluates the annual broadband-related growth in most advanced countries in Europe as 0.89% of the GDP, noting that countries with less-developed economies take less advantage of broadband, namely by 0.47% of the GDP (FORNEFELD, M. DELAUNAY, G. and ELIXMANN, D. (2008), The impact of broadband on growth and productivity, A study on behalf of European Commission (DG Information Society and Media, http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/broadband_impact_2008.pdf, last visited by 22.03.2010, p. 6 and 104). According to the same report, in the base case, the European GDP will have a broadband-related increase of €850 bn between 2006 and 2015. In the worst case, broadband-related effects would result in an increase in GDP of only € 636 bn by 2015; while in the best case, €1,080 bn cumulative GDP growth could be achieved (*Ibid.*, p. 111).

⁵ In a study whereby general drivers and inhibitors of broadband performance of EU countries are measured via a research model, it is found that most of the 21 indicators chosen (such as English literacy, teleworking, service sector activity, or unemployment) are significantly related to broadband development, i.e. the broadband subscriber penetration, Internet user ratio and commercial introduction timing for broadband (JAKOPIN, N. M., (2009), Drivers and Inhibitors of Countries' Broadband Performance – A European Snapshot, in PREISSEL, B., HAUCAP, J. and CURWEN, P. *Telecommunications: Drivers and Impediments*, Physica-Verlag Heidelberg, p. 204). Similarly for testing the correlation between broadband penetration and a number of parameters, i.e. Internet usage ratio, computer ownership ratio, GDP, age range (between 15-64),

indicators herald the importance of and the need to building a national broadband policy. In fact, policy promulgation is not only related to technology incubation but also linked to accumulation of welfare; and developing countries, which import technologies and business models without devising a broadband policy, would have to face bigger problems threatening their social and economic well-being in the new Internet era.

In 2000, European Union (EU) declared its Lisbon Strategy, which marked a cornerstone for the prospective EU-wide broadband and ICT-inclusive actions and regulatory efforts. In Lisbon, a new Community-level strategic goal has been designated for the coming decade: *to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion*.⁶ To that end, in May 2002, the European Commission (Commission) introduced the ‘eEurope 2005’ program, which aimed to develop modern public services and a dynamic environment for e-business through widespread availability of broadband access at competitive prices and a secure information infrastructure⁷. Following the end of eEurope 2005 Program, another EU-wide ICT Strategy called “i2010 initiative - a European Initiative for growth and employment” was launched on June 1, 2005.⁸ One of the objectives of this initiative was declared as promotion of high-speed and secure broadband networks offering rich and diverse content in Europe.⁹ Not only eEurope 2005 and i2010 initiatives but also

ownership of mobile handsets, including a projection for a five year period (2005-2010) as to the trend of broadband penetration in Turkey on the basis of an inductive learning model, see ÇÖL, M. and ÜNVER, M. (2005), Türkiye Genişbant Pazarı için Tümevarım Yaklaşım, *Telekomünikasyon ve Regülasyon Dergisi*, Sayı 1, http://www.tk.gov.tr/Yayin/Sureli_Yayinlar/trd/pdf/trd_2005_1.pdf, last visited by 22.03.2010, p. 31-37.

⁶ EUROPEAN COUNCIL, (2000), Speech by the President Nicole Fontaine, Presidency Conclusions, Lisbon, 23 and 24 March 2000, www.europarl.europa.eu/bulletins/pdf/1s2000en.pdf, last visited by 22.03.2010, p. 12.

⁷ EUROPEAN COMMISSION, (2002), Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, eEurope 2005: An Information Society for All, Brussels, 28.5.2002, COM(2002) 263 final, http://ec.europa.eu/information_society/eeurope/2005/all_about/action_plan/index_en.htm, last visited by 22.03.2010.

⁸ EUROPEAN COMMISSION, (2005), Communication from the Commission to the Council, the European parliament, the european economic and Social Committee and the Committee of the Regions, “i2010 – A European Information Society for growth and employment”, SEC(2005) 717, Brussels, 1.6.2005 COM(2005) 229 final, http://eurlex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=en&type_doc=COMfinal&an_doc=2005&nu_doc=229, last visited by 22.03.2010.

⁹ Europe, Press Releases RAPID, (2010), Commission launches five-year strategy to boost the digital economy, Reference: IP/05/643 Date: 01/06/2005,

other policy documents of EU, e.g. 2006 Communication on “Bridging Broadband Gap”¹⁰ revealed a clear positive stance towards developing national broadband strategies with particular regard to bridge the gap of access, speed, quality of service and price in broadband between urban and rural/remote areas. Europe 2020, representing the most recent step of EU-wide ICT strategies and putting forth the ways to recover from the global economic and financial crisis to be assessed and enhanced before the Council and the Parliament, does not elaborate the broadband-related issues.¹¹ Notwithstanding, its ambitious goals and the targets that spread out to a ten-year period could hardly be realized without broadband investments and their forerunner role in building an information society, and this fact seems to have been affirmed by the actions and decisions of the Commission, who has a clear determination to enhance broadband coverage¹² and state aids awarded through public tenders on certain

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/05/643&format=HTML&aged=0&lan>, last visited by 22.03.2010.

¹⁰ EUROPEAN COMMISSION, (2006), Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions Bridging the Broadband Gap, SEC(2006) 354-355, Brussels, 20.3.2006, COM(2006) 129 final, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX: 52006DC0129:EN:NOT>, last visited by 22.03.2010, stating “[I]n the context of eEurope 2005, and on the basis of discussions at Telecom Councils, 15 Member States put in place National Broadband Strategies in 2003. Five new Member States have since decided to adopt similar documents. All strategies recognise the role of competition in driving private investment. (...) Action at all government levels can help to increase coverage in under-served areas. Nevertheless, the assessment of market failures is a difficult task, particularly when there is uncertainty over the pace of broadband deployment. The benefits from government intervention must therefore be clear and substantial, compensating for the risks of undesirable consequences.” (*Ibid*, p. 7-8). See also Europe, Press Releases RAPID, (2006), The Commission’s “Broadband for all” policy to foster growth and jobs in Europe: Frequently Asked Questions, Reference: MEMO/06/132, Date: 21/03/2006, <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/06/132&format=HTML&aged=1&language=EN&guiLanguage=en>, last visited by 22.03.2010, stating “[T]he Commission has also long been encouraging EU Member States to adopt and implement national broadband strategies to stimulate the supply and the demand side of the market whenever identified as a national priority”.

¹¹ Europe, Press Releases RAPID, (2010), Europe 2020: Commission proposes new economic strategy in Europe, Reference: IP/10/225, Date: 03/03/2010, <http://europa.eu/rapid/pressReleasesAction.do?reference=IP /10/225& format=HTML>, last visited by 22.03.2010.

¹² The Commission itself earmarked up to €1 billion as part of the European Economic Recovery Plan to enhance broadband coverage in rural areas in all Member States (See EUROPEAN COMMISSION, (2008), Communication from the Commission to the European Council, A European Economic Recovery Plan, Brussels, 26.11.2008, COM(2008) 800 final) Thereby, Commission aimed to achieve 100% high-speed internet coverage (which was on average 93% at the end of 2008) for all citizens by 2010 as part of the European Economic Recovery Plan, having the ultimate goal of creating 1 million jobs and boosting the EU’s economy by €850 billion between 2006 and 2015 (See Europe, Press Releases RAPID, (2009), Commission earmarks €1bn

conditions, e.g. opening infrastructures to all operators on a technologically neutral basis and minimising distortions of competition.¹³

Not only EU but also the Organisation for Economic Co-operation and Development (OECD) tries to have its members take initiative to have world-class broadband infrastructure and services. In October 2003 OECD released a paper titled 'Broadband Driving Growth: Policy Responses' outlining not only the importance of broadband for economic and social development but also the policies which should be used to guide broadband development¹⁴. In February 2004, OECD Council adopted the Recommendation of the Council on Broadband Development, calling on its members to implement the policy principles which have already been declared in 2003 Policy Paper to assist the

for investment in broadband - Frequently Asked Questions, Reference: MEMO/09/35, Date: 28/01/2009, <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/35>, last visited by 22.03.2010.)

¹³ With a view to supporting economic recovery and the long term competitiveness of Europe, Commission issued a State Aid Guidelines on the ground of its practical experiences and decisions taken during the past five years with regard to state support to rollout of broadband networks (EUROPEAN COMMISSION, (2009), Communication from the Commission, Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks, (2009/C 235/04), 30.9.2009, http://ec.europa.eu/competition/state_aid/legislation/specific_rules.html#broadband, last visited by 22.03.2010). The guidelines provide an overview on how Member States can support broadband networks without unduly distorting competition in the Single Market and helped to accelerate the decision making process. Since September 2009, the Commission has endorsed almost €300 million public funding to support the deployment of broadband networks. In all the decisions taken so far, the Commission stressed the need for awarding aid through public tenders, opening infrastructures to all operators on a technologically neutral basis and minimising distortions of competition through a thorough market research and consultation with existing operators (Europe, Press Releases RAPID, (2009), State aid: Commission processes record number of broadband projects following new Broadband Guidelines, Reference: MEMO/10/31, Date: 08/02/2010, <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/10/31&format=HTML&aged=0&language=EN&guiLanguage=nl>, last visited by 22.03.2010).

¹⁴ OECD, (2003), DSTI/ICCP(2003)13/FINAL, Broadband Driving Growth: Policy Responses, OECD, Paris, http://www.oecd.org/document/56/0,2340,en_2649_33703_16220890_1_1_1_1,00.html, last visited by 22.03.2010, In the so-called policy paper the importance of broadband networks and services is explained as follows:

“[I]t is of strategic importance to all countries because of [broadband’s] ability to accelerate the contribution of ICTs to economic growth in all sectors, enhance social and cultural development, and facilitate innovation. Widespread and affordable access can contribute to productivity and growth through applications that promote efficiency, network effects and positive externalities, with benefits for business, the public sector, and consumers. Broadband networks are an important platform for the development of knowledge-based global, national, regional, and local economies.” (*Ibid*, p.1).

expansion of broadband markets, promote efficient and innovative supply arrangements, and encourage effective use of broadband services.¹⁵ OECD, upon monitoring the domestic markets and country figures during the three year-period following adoption of 2004 Recommendation, published a report that reveals broadband developments till the beginning of 2008, and highlights policy challenges and needs¹⁶. In this Report, though OECD members setting up annual reviews, study groups and plans is positively reacted, they are called on to implement their broadband plans in a more effective and accountable manner, noting that national plans rarely include mechanisms to review the performance of government initiatives.¹⁷

Broadband in the OECD members is dominated by digital subscriber line (DSL) (62%) with cable having the subscribers equal to just about half of DSL (29%).¹⁸ Though there are multiple transmission means for offering broadband; cable, DSL, fixed wireless access (including Wi-Fi), Worldwide Interoperability for Microwave Access (Wi-Max), third generation (3G), satellite, broadband over powerline (BPL), fibre-to-the-home (FTTH) are the major technologies that are available to most of the OECD countries including Turkey¹⁹. As spectrum based technologies, including Wi-Max and 3G are not cost-efficient and promising to provide high-speed and widespread broadband services on an individual basis, fibre networks are leading building of next generation modern networks globally. Wireless networks, e.g. Wi-fi, Wi-Max are for the most part based on fixed infrastructure connecting the outer nodes of the networks; and if these networks become successful and as applications may become more data intensive, the amount of traffic will quickly necessitate

¹⁵ OECD, Recommendation of the Council on Broadband Development (adopted by the Council at its 1077th Session on 12 February 2004), C(2003)259/FINAL, OECD, Paris, www.oecd.org/dataoecd/57/29/32167012.pdf, last visited by 22.03.2010.

¹⁶ OECD, (2008) Broadband Growth and Policies in OECD Countries, OECD, Paris, <http://www.oecd.org/dataoecd/32/57/40629067.pdf>, last visited by 22.03.2010.

¹⁷ *Ibid*, p. 134.

¹⁸ *Ibid*, p. 34.

¹⁹ For details of the broadband technologies with their comparative features in terms of usage, price, availability, see CRANDALL, R. W. (2005), Broadband Communications in MAJUMDAR, S. K., VOGELSANG, I. and CAVE, M. E. (eds.), *Handbook of Telecommunications Economics Volume 2*, Elsevier B.V., Amsterdam, p. 155-190; CANTEKİNLER, K., ÇAYCI, D., DAŞDEMİR, Ö., YAYLA, F. and YILMAZ, R., (2008), *Teknoloji, Hizmetler, Düzenleme ve Dünyadaki Gelişmelerle Genişbant*, Sektörel Araştırmalar ve Stratejiler Dairesi Başkanlığı, Telekomünikasyon Kurumu, http://www.tk.gov.tr/Yayin/Raporlar/Arastirma_Raporlari.htm, last visited by 22.03.2010; Muhterem Çöl ve Mustafa Ünver, (2005), Genişbant Erişimi ve Pazarı, *Telekomünikasyon ve Regülasyon Dergisi*, Sayı 2, http://www.tk.gov.tr/Yayin/Sureli_Yayinlar/trd/pdf/trd_2005_2.pdf, last visited by 22.03.2010, p. 124-132.

robust backbones.²⁰ Besides, lack of sufficiently available symmetrical protocols and standards as well as spectrum and speed constraints affect reliability of wireless technologies in future consumer and business markets.²¹ Thus not only for the steadily increasing bandwidth demand but also on ground of long-term benefits, wireline infrastructure are eventually preferred by entrepreneurs. Operators installing new wired networks are increasingly using fibre optics instead of copper.²² Fibre networks are preferred in new infrastructure developments because the public works component is roughly 70% of the total cost of the network rollout, and the additional costs of installing fibre instead of copper in the ducts are minimal.²³

Turkey, ranking at the bottom of a number of OECD statistics (e.g. broadband penetration growth, fastest broadband download speed)²⁴, needs a comprehensive roadmap to compensate the gap between itself and the advanced knowledge societies, to present new social and economic opportunities to its citizens, and to achieve high-speed, innovative broadband platforms, which today function as digital highways. The situation of Turkey reveals a picture of two established broadband platforms; one is the DSL network of the fixed incumbent operator, Türk Telekom; the other is Türksat's cable network. Except for other newly emerging technologies such as satellite and FTTx,²⁵ the most prominent platform that would be a serious rival against the former two is the 3G networks owned by the mobile operators. Notwithstanding the fact that 3G subscription rates reveal a satisfactory starting performance, success of 3G outside the metropolitan areas, which would be a critical enabler in prospect of Turkey's broadband map, remains to be seen.²⁶

²⁰ HUIGEN, J. and CAVE, M., (2008) Regulation and the promotion of investment in next generation networks - A European Dilemma, *Telecommunications Policy*, Vol. 32, p. 719.

²¹ *Ibid*, p. 719-720.

²² OECD, 2008, p. 34.

²³ OECD, 2008, p. 34.

²⁴ OECD, 2008, p. 28 and 45. In other statistics such as broadband penetration (p. 25), broadband prices per megabit per second (p. 43), fastest broadband download speed offered by incumbent (p. 44), Turkey ranks just above a few countries that have the lowest figures, e.g. Mexico, Greece. For Turkey's current situation regarding those broadband indicators, see *infra* section "4. Analysis of Turkish Broadband Market".

²⁵ FTTx is used to refer to all the fibre-based transmission means, which include not only FTTH (in this case fibre optic is located over all the distance between end-users and the central exchange), but also various combinations of fibre and other technologies, e.g. DSL, wireless technologies at distinct switching points such as curbs (FTTC), cabinets (FTTCab) and buildings (FTTB).

²⁶ Since the launch of 3G services in Turkey by the date of 30.07.2009, 7.064.842 mobile users have opted to have a mobile connection through a 3G network with compatible devices, whereby

As a matter of fact, insufficient investments in new technologies, e.g. VDSL2²⁷ and platforms, e.g. cable network²⁸, lack of an overall governmental project, and inclination of new entrants to rely on existing technologies and networks at promotional prices are the existing problems which harden devising and implementing a broadband policy in Turkey. Absence of effective competition between rival networks, belated liberalisation which extended to the beginning of 2004, and demographical/geographical constraints are the other aspects that require regulatory attention for Turkey. On the other hand, low penetration level, the existence of young population, the lowness of the entry price level, and commercially extensive room for bundle, triple-play and innovative services are the advantageous points for prospect of Turkish broadband market. Notwithstanding, concentration level and the limited coverage of available platforms/technologies in Turkish broadband market demonstrate a clear need for pursuing a macro and long term point of view. This is compelling because near 98.5% of the Internet consumers use the DSL network of the fixed incumbent, and 93.2% of these users are the subscribers of the subsidiary of the fixed incumbent.

Turkey, having just clarified a number of issues regarding authorisation, i.e. provision of local telephony and cable services, and facing underdeveloped transmission technologies, is in need to face its unsuccessfully passed years in terms of ICT strategies and to have a macro and long-term national broadband policy. As far as developing countries are concerned broadband policies are presumed to be well-designed where and insofar as a gradual way towards a competitive and innovative marketplace is followed. Yet, this presumption is hardly applicable to Turkey where the so-called gradual approach is proven unsuccessful in resemblance with many developing countries that have faced similar experiences, namely an exponential growth in penetration first and a

396,363 of them had taken the benefit of a specific 3G tariff package (See Market Data, 2009 4th Quarter, http://www.tk.gov.tr/Yayin/pv/ucaylik09_4.version2.pdf, last visited by 22.03.2010, p. 27).

²⁷ VDSL2 (Very high bit rate DSL) is a service that allows the data rates up to 52 Mbps. This service has been started to be offered by Türk Telekom in early 2008 (after almost a year following its marketing). The critical issue here is that the availability of VDSL service for the end-users. This service can only be provided for the end-users located very close to the exchange and/or street cabinets in order to prevent the attenuation over the twisted pair copper. In this regard, the lack of sufficient FTTx applications in Turkey (where there are only 354 compatible DSLAMs and 8768 ports for VDSL2 in 10 cities) stands as a problem for Turkish citizens most of whom are not able to enjoy the very high speed broadband services. (See YALÇIN, F. T., (2009) *Challenges in Migration towards Next Generation Access Networks (FTTx) with a Special Focus on Turkey*, MSc/MBA/MCM Dissertation, Coventry University, Faculty of Engineering and Computing, p. 57-58.)

²⁸ See *infra* sub-section "4.1. General Information".

leveling off period subsequently²⁹. This ostensible maturation could hardly be animated through market competition on a single platform. The nature and the limited role of commercial initiatives are seen by many countries including those where cable-DSL competition is strong, i.e. Canada, USA, UK, and governmental support mechanisms have been launched in most of them³⁰. The

²⁹ Internet subscriber numbers per each technology and their progress during the last two year (2008-2009) demonstrates such a trend for Turkey. Notwithstanding, in respect of total Internet subscriber number, the third and fourth quarters of 2009 witness an increase that is pertinent to launch of 3G services by the end July 2009 (See Market Data, 2009 4th Quarter, http://www.tk.gov.tr/Yayin/pv/ucaylik09_4_version2.pdf, last visited by 22.03.2010, p. 20).

³⁰ Canada, USA and UK, who represent the remarkable examples for inter-platform competition between cable and DSL, are also putting effort not to lag behind Far East Countries in next generation broadband investments. As a result of the nationwide availability of both cable and DSL infrastructure in those countries, where DSL and cable broadband providers have entered the market early, customers living in many urban centres have had the choice of two facilities-based service providers for more than 10 years. For instance, in the Canadian market, development of governmental broadband policy and regulation geared towards competition remain key components in stimulating development of next generation broadband networks and further stimulating innovation (VAN GORP, A. and MIDDLETON, C. (2009), The impact of facilities and service-based competition on internet services provision in the Canadian broadband market, *Telematics and Informatics* doi:10.1016/j.tele.2009.12.001, p. 9). Equally, a notable feature of US broadband market is existence of a strong inter-platform competition (between DSL and cable) which is accompanied by government-funded next generation broadband (fibre) investments. On February 13, 2009 US Congress passed the American Recovery and Reinvestment Act, which appropriated 7.2 billion USD and directed the Department of Agriculture's Rural Utilities Service and the Department of Commerce's National Telecommunications Information Administration to expand broadband access to unserved and underserved communities across the U.S., increase jobs, spur investments in technology and infrastructure, and provide long-term economic benefits (See <http://broadbandusa.sc.egov.usda.gov/>, last visited by 22.03.2010). Likewise, UK Government has commenced a public consultation for designing and launching a Next Generation Fund across the country (DEPARTMENT FOR BUSINESS INNOVATIONS & SKILLS, (2010), Consultation on proposals for a Next Generation Fund: Digital Britain, <http://www.berr.gov.uk/files/file54154.pdf>, last visited by 22.03.2010). Like US, Canada and UK, several countries planned to use stimulus and recovery funds to support rollout of high capacity networks, either to upgrade to fibre for everyone, or to bring underserved areas up to speed (BERKMAN CENTER FOR INTERNET & SOCIETY, HARVARD UNIVERSITY, (2010), Next Generation Connectivity: A review of broadband Internet transitions and policy from around the world, Final Report, <http://cyber.law.harvard.edu/pubrelease/broadband/>, last visited by 22.03.2010, p. 16). For the planned/continuing infrastructure investments governed by various countries and operators, see KULALI, İ. and BİLİR, H., (2010), *Bilgi ve İletişim (Telekomünikasyon) Sektöründeki Gelişmeler ve Eğilimler: Global Finansal Kriz Sürecinde Yeniden Yapılanma ve Çözüm Arayışları*, TOBB Yayın No: 2010 - 102, <http://www.tobb.org.tr/yayinlar/yayinlar.php>, last visited by 22.03.2010, p. 152-154. In Turkey, from the very beginning entrenched models have maintained its development pace with no serious infrastructure-based competitor (except for Superonline, see *infra* note 128), and it seems to be indifferent without any state planning. A number of studies have pointed out that broadband development generally thrives in those countries where it is a national priority (Van Gorp and Middleton, 2009, p. 10). Brazil, seeing this fact as one of the leading developing countries, took a number of actions and prepared a macro-level broadband policy, whereby it is

public consultation recently launched in the UK on why and how to construct next generation broadband infrastructure, and whether and to what extent governmental support is needed discusses and demonstrates this fact.³¹ The following extract from the UK's public consultation reveals the crucial role attributed to governmental actions in a large industry on the way to be an advanced knowledge society:³²

“[T]he market in the UK is delivering NGA, with Virgin Media's high speed broadband service available to nearly 50% of households. BT have stepped up their efforts to deliver NGA [Next Generation Access]³³ and aim to connect 1.5 million homes to NGA in 2010, and aim to have NGA in 40% of all homes by 2012. There are also many smaller, local infrastructure projects that are delivering NGA to the marketplace. But due to the high cost of this infrastructure, it is estimated that the market alone will not deliver much beyond 60-70% of the country. Therefore, without intervention, many towns and communities will not be able to benefit from the advantages NGA can offer.”

planned to achieve 30 million broadband users by 2014, which is normally (without national plan) expected not to exceed 18.4 million; to make broadband available at all government and public sector institutions such as schools, libraries, law enforcement agencies and healthcare providers; to roll out around 100,000 community tele-centres; and to put a number of regulatory and governmental actions into force, i.e. fibre deployment, release of wider spectrum band, tax reductions (See Telecompaper, <http://www.telecompaper.com/news/article.aspx?cid=705362>, last visited by 22.03.2010).

³¹ The following two paragraphs, summarising the elaborated answers to such questions, give a snapshot in relation to the vision of UK Government:

“[M]any countries, like the UK, consider Next Generation Access Networks to be vital to international competitiveness. It is believed that NGA will have positive effects on the economy in the UK but to take advantage of this opportunity the UK must be ready to invest in the future of its NGA networks. It is reasonable to assume that Next Generation Access will deliver similar benefits to current generation broadband: higher productivity, increased innovation, improved access to new markets and business opportunities created by e-commerce, greater consumer choice and easier and quicker access to e-government services. It is still difficult to predict exactly what services and applications could become available. Just as services such as social networking, and real-time streaming were unimaginable 10 years ago, the innovative applications that super-fast broadband could support are only to be guessed at. But we do know that bandwidth demands are increasing year on year as consumers take advantage of the services offered over faster networks. This is only likely to increase. Whilst the following chart illustrates traffic in the core of the network, there are obvious conclusions to draw in relation to the access part of the network” (Consultation on proposals for a Next Generation Fund: Digital Britain, 2010, p. 11).

³² Consultation on proposals for a Next Generation Fund: Digital Britain, 2010, p. 4.

³³ Next Generation Access is the term used to describe the infrastructure and set of technologies which provide super-fast broadband including Fibre to the Cabinet (FTTC), Fibre to the Home (FTTH), satellite or mobile wireless technologies (Consultation on proposals for a Next Generation Fund: Digital Britain, 2010, p. 9).

Under this light, it seems apparent that in a country having a large territory the same as Turkey, without a long-term plan involving all the interest groups including government on the ground of a number of local, commercial and collaborative actions, neither the ICT goals articulated in 9th Development Plan (2007-2013)³⁴ nor the strategic priorities in the ICT Strategy Paper (2006-2010)³⁵ could be achieved. In order to reach such articulated objectives, all the possible legal and economic measures to reach a competitive marketplace, where innovative, high-speed and largely available broadband networks and services are to be unleashed, should be elaborated. By not disregarding the possible restrictive effects of funding schemes and governmental supports on the relevant market and initiating the efforts to eliminate them [which, to a great extent, rely on Competition Authority (CA)], the key issues, plans and business models formerly experienced within the most comparable countries could favourably be followed, in this regard. Representing by-product of such actions and efforts, a next generation broadband infrastructure (in combination of fibre and DSL) that is to be in competition with a highly-developed cable platform and self-sustaining mobile services³⁶, would serve many of the globally and nationally articulated ICT objectives, i.e. affordable broadband connectivity, a level playing field where market forces can drive continued innovation, full participation of all citizens in Internet-based higher education, etc.

In this study, first the historical background of Turkish telecommunications markets is summarised and applicable regulatory framework is expounded. Afterwards, the analysis of Turkish broadband market is gone through by explaining the main figures and the evolution of existing access models including regulatory interventions. In this context, regulatory measures taken by Information Communications and Technologies Authority (ICTA)³⁷, i.e. concerning local loop unbundling (LLU), facility sharing,

³⁴ STATE PLANNING ORGANISATION, (2006), 9th Development Plan (2007-2013), Official Gazette, Date: July 1, 2006, No: 26215, Decision of Turkish Grand National Assembly, <http://ekutup.dpt.gov.tr/plan/plan9.pdf>, last visited by 22.03.2010.

³⁵ STATE PLANNING ORGANISATION, (2006), Information Society Strategy (2006-2010), http://bilgitoplumu.gov.tr/Documents/1/BT_Strateji/Diger/060700_BilgiToplumuStratejiBelgesi.pdf, last visited by 22.03.2010, p. 50-53.

³⁶ In respect of mobile traffic, the total volume that has reached twice its level (from 14.6 billion minutes to 29 billion minutes) during the last two years and the steadily increasing rate clearly demonstrates that mobile market is getting more competitive, enlarged and self-sustainable on itself (See Market Data, 2009 4th Quarter, http://www.tk.gov.tr/Yayin/pv/ucaylik09_4.version2.pdf, last visited by 22.03.2010, p. 33).

³⁷ ICTA, being the Turkish regulatory authority in charge of regulating, auditing and monitoring electronic communications industry, was previously called Telecommunications Authority (TA). With the entry into force of the Electronic Communications Act dated 10.11.2008 and numbered 5809, ICTA was created to replace TA, and delegated with more extensive powers (See *supra*

including the cornerstone decisions and implementations are analysed. As well, the role and the decisions of the CA are examined with their far-reaching effects on Turkish broadband market, by touching upon the interrelationship between CA and ICTA. The study finally elaborates the possible actions and measures that rely on competent authorities, e.g. CA, ITCA and Ministry of Transport, by taking into consideration the successful examples across the globe. Out of the possible policy tools, allocation of a portion of general budget or universal service funds to broadband deployments, making ample capacities of utilities available to broadband operators, encouraging public-private cooperation and enabling municipalities to build broadband infrastructure are given a special emphasis. After a variety of measures being put forward, it is found that making a multi-dimensional plan entailing all the relevant parties (e.g. municipalities, universities, public utilities), delegating a task force for implementing the plan, combination of flexible business models with fund allocation schemes are the main success factors which Turkey would effectively adapt to itself in line with many of the developed countries. Stronger coordination among competent authorities themselves and with operators, gradual forbearance from regulation of the entrenched models along with the accelerated roll-out of LLU and other emerging broadband platforms, e.g. FTTx are the other strategic behaviours suggested hereby. Last but not least, public debate over creation of a national broadband policy and projects should be maintained on the country agenda, attracting more participants to discuss how to build and implement a sound broadband strategy in Turkey.

2. Historical Background of Turkish Telecommunications Industry

Until 1994, telecommunications services in Turkey have been provided under state control, namely by Posts, Telegraph and Telephone Administration (PTT), a country-wide monopoly offering postal and telecommunications services. By means of a legal divestiture pursuant to the Act No. 4000 that entered into force in June 1994, PTT was separated into two parts, and telecommunications services started to be carried out by Türk Telekomünikasyon Inc. (Türk Telekom), a fully state-owned company at that time³⁸. Türk Telekom was a national monopoly with exclusive rights over establishment and operation of all telecommunications services and networks. Operation of the cable network and services were also carried out by Türk Telekom via a revenue-sharing model with sub-contracting cable firms, until April 2005 (then transferred to Türksat). Similarly, cellular mobile telecommunications services in Turkey commenced in

section “3. Turkish Regulatory Framework”). Hence, in the study, references are made to ICTA, except for those that pertain to the pre-ICTA period.

³⁸ With the Act No.4000, it became possible to privatise 49% shares of Türk Telekom, as well.

1994 and have been offered via revenue-sharing agreements (made between Türk Telekom and two firms, namely Turkcell and Telsim) until 1998.

The liberalisation in Turkish telecommunications industry has partially started in April 1998 with the granting of two GSM 900 licenses (given via the concession agreements) to Turkcell and Telsim. The bidding for the third license for establishment and operation of a GSM 1800 network was won by Türkiye İş Bankası (Is Bank) and Telecom Italia Mobile (TIM) consortium (Is-Tim) in October 2000. Finally, Türk Telekom, having been granted another GSM 1800 license in January 2001, started operation under the name of Aycell. Both the former and the latter paid 2.5 billion USD, which has been offered by Is-Tim in the first auction and was taken as the minimum price to be paid in the second one. Not only the high starting price that is five times the licence fee paid by Turkcell and Telsim but also operational and financial hurdles, e.g. inability of making national roaming with Turkcell-Telsim³⁹, two major economic crisis (emerged in late 2000 and early 2001) in Turkey made the small competitors, namely Aycell and Is-Tim merge in 2004. As a result, they

³⁹ Roaming dispute arose out of the unmet demand of Is-Tim (using the brand of Aria), who entered into the market in late 2000 and wished to spread its services to all over the country by making roaming agreement(s) with Turkcell and Telsim. Turkcell and Telsim refused to open their networks to Is-Tim, namely did not accept the conditions offered by Is-Tim for roaming agreement. Is-Tim has applied to both CA and TA in reaction to their refusals to grant roaming over their networks. Each Authority has concluded that the so-called refusal constituted breach of law, and punished Turkcell and Telsim for not permitting roaming. Applying an administrative fine that was not faced before, CA reached its finding via application of Essential Facilities Doctrine, and deemed the infrastructures of Turkcell and Telsim as “essential facility” during the phase of entry of GSM operators into the market. According to CA, Turkcell and Telsim, holding a joint dominant position in GSM telecommunications infrastructure market, abused their market power by refusing to make roaming with Is-Tim. On the other hand, TA ordered Turkcell and Telsim to allow Is-Tim to make roaming through their own networks in accordance with Article 10/5 of the Law No. 406 (currently not in force) which brought out an obligation *to meet reasonable, economically proportionate and technically feasible roaming requests*. The fine decisions of the two Authorities have become the subject-matter of a number of legal cases both before national administration courts and international arbitration court (ICC). For the details of this dispute as well as its analysis on legal and economic grounds, see ATİYAS, İ. and DOĞAN, P., (2007), When good intentions are not enough: Sequential entry and competition in the Turkish mobile industry, *Telecommunications Policy*, Vol. 31, p. 509-511; ATİYAS, İ., (2005), Competition and Regulation in the Turkish Telecommunications Industry, Economic Policy Research Institute, Working Paper 3, <http://www.tepav.org.tr/tur/index.php?type=books>, last visited by 22.03.2010 p. 27-30; ÜNVER, M. B., (2004), *Essential Facilities Doctrine Under EC Competition Law and Particular Implications of the Doctrine for Telecommunications Sectors in EU and Turkey*, MSc Thesis, Middle East Technical University, p. 145-155. See also İNCEEFE, M. A. (2004), Rekabet Kuralları ve Sektörel Düzenlemeler Üzerine Kuramsal ve Pratik Açılardan Özel Bir İnceleme: Ulusal Dolaşım, Rekabet Hukukunda Güncel Gelişmeler Sempozyumu - II, <http://www.rekabet.gov.tr/index.php?Sayfa=etkinlikkitapliste>, last visited by 22.03.2010, p. 135-189.

established Avea, who was granted license in January 2005, representing the third GSM operator against the two incumbents. GSM industry has witnessed another important event in early 2004: Telsim has been taken over by Tasarruf Mevduatı Sigorta Fonu (Turkish Deposit Insurance Fund - TDIF) because of its owner's (Uzan Group) debts to the State. Subsequent to a period of approximately two year following TDIF taking over Telsim, Imar Bank and other companies owned by Uzan Group, a tender has been organised for sale of Telsim. In the end, Telsim was sold to Vodafone, who made the highest bid of 4.55 billion USD in an open auction. Ultimately saying, 3 licensed GSM operators (Turkcell, Vodafone and Avea) operate in Turkey for the time being without currently facing an active competitor in field of MVNO or WIMAX. 3G services, for which existing 3 GSM operators have been licensed on April 30, 2009⁴⁰, have launched in the beginning of the second half of 2009. Despite the fact that less than one year has passed since then, 3G subscribers exceeded 7 million, which could be deemed quite promising for the future of mobile broadband and real-time video services.⁴¹

On the side of PSTN (fixed-line) services, the same pace of liberalisation and growth could not be mentioned. Liberalisation of fixed telecommunications services has not been possible before January 1, 2004. The Act No. 4502 dated January 27, 2000⁴², which boosted the structural reform from monopoly towards a liberalised industry, set forth the date of liberalisation for fixed line services as 31.12.2003⁴³. The said Act, amending the Wireless

⁴⁰ Concession Agreement being signed (licensing) was preceded by an open auction that has taken place on November 24, 2008, where three types of 3G frequency spectrums have been auctioned and sold to the three GSM operators. A type 3G (40 MHz) frequency spectrum has been sold to Turkcell whereas 35 MHz and 30MHz (B, C types) frequency spectrums are respectively sold to Vodafone and Avea in the end of open auction.

⁴¹ However, the fact that a predictable trend about 3G demand could hardly be gauged by looking the data of the initial six month period (e.g. around 400 thousand people out of more than 7 million 3G subscribers have had a specific tariff) makes anyone to be more cautious in respect of prospect of mobile broadband. See Market Data, 2009 4th Quarter, http://www.tk.gov.tr/Yayin/pv/ucaylik09_4.version2.pdf, last visited by 22.03.2010, p. 27; See also *supra* note 26.

⁴² See the English version of the Act No. 4502 via <http://www.tk.gov.tr/eng/duzenmaineng2.html>, last visited by 22.03.2010.

⁴³ In 1998 the Turkish government had committed itself, in accordance with the World Trade Organization guidelines, to liberalize its fixed-line telephone network and services no later than the end of 2004. Besides, the Act No. 4502 has shifted the liberalisation timetable to the end of 2003 to accelerate the process (AKDEMİR, E., BAŞÇI, E. and LOCKSLEY, G., (2005), Turkish Telecommunications Sector: A Comparative Analysis, in Turkey: Economic Reform and Accession to the European Union, in HOEKMAN, M. H. and TOGAN, S. (eds.), Washington D.C.: World Bank, p. 152, http://siteresources.worldbank.org/INTRANETTRADE/Resources/Pubs/Turkey_BHoekman&STogan_book.pdf, last visited by 22.03.2010).

Act⁴⁴ and Telegraph and Telephone Act⁴⁵, which were the two basic telecommunications laws in Turkey, constituted the baseline not only for opening telecommunications infrastructure and services to competition, but also for regulating the industry, e.g. by means of interconnection and roaming obligations, pricing rules, dispute resolution processes. To fulfil these duties, a regulatory body called ‘Telecommunications Authority’ (TA) was established, and a number of powers, i.e. numbering, interconnection, monitoring and regulating tariffs were delegated to it⁴⁶. TA has started to perform its duties before liberalisation, and issued more than eighty implementing regulations, e.g. Ordinances, Communiqués during and pre-liberalisation period, namely between 2001-2004.

Removal of legal monopoly by December 31, 2003 paved the way for TA to authorise new operators after which Authorisation Ordinance on Telecommunications Services and Infrastructure (Authorisation Ordinance)⁴⁷ was put into force, and a number of class licenses were granted. First, to enable alternative operators to provide national and international telephone services, licenses for ‘long distance telephony services’ were started to be given following May 2004. Licences were also given as to the satellite telecommunications services, satellite platform services, GMPCS mobile telephony services, telephone message services, data transmission over terrestrial lines, cable platform services, provision of infrastructure, internet service provision, directory inquiry services, which have been opened to competition subsequently. Meanwhile, Türk Telekom was (partially) privatised, and 55% of its shares have been acquired by Oger Telecom in return of 6.55 billion USD after a tendering made in November 2005⁴⁸.

Currently, there are 17 alternative (fixed telephony) carriers offering local, national and international services in competition with Türk Telekom though 73 alternative operators were licensed to date. However, they could not have been able to provide local (inner city) telephony services until recent ICTA regulations have been issued in May and October 2009 pursuant to the new primary legislation (Electronic Communications Act). Beforehand, the already

⁴⁴ See the English version of the Wireless Act No. 2813 via <http://www.tk.gov.tr/eng/pdf/5681.pdf>, last visited by 22.03.2010.

⁴⁵ See English version of the Telegraph and Telephone Act No. 406 via <http://www.tk.gov.tr/eng/pdf/406.pdf>, last visited by 22.03.2010.

⁴⁶ While at the time of entry into force of the Act No. 4502 only supervising the implementation of telecommunications licenses was referred to as the duty of TA, one year after with the enactment of the Act No. 4673, the duty to grant such licences was taken from the Ministry and given to TA.

⁴⁷ Official Gazette, Date: 26.08.2004, Number: 25565.

⁴⁸ In April 2008, Oger Telekom bought some additional shares of Türk Telekom, once 15% of the state-owned shares have been put on sale to the public.

given licenses were not covering local calls, and TA's attempt to open the local telephony services to competition has not been successful because of a judicial break. Council of State (Higher Administrative Court) suspended the enforcement of 'Fixed Telecommunications Service' Annex to the Authorisation Ordinance that entered into force in August 2007,⁴⁹ holding that each telecommunications service requires separate license, and that the coverage of the said Annex is larger than it should be⁵⁰. Similarly, Council of State annulled the 'Cable Platform Service' Annex to the Authorisation Ordinance, relying on the same reasons stated above, in January 2007⁵¹. The referred Court decisions stopped the authorisation of services that are critical for liberalisation and the realisation of the articulated policy objectives of Turkish Acts.

3. Turkish Regulatory Framework

TA, after having started to perform its duties as of August 15, 2000, took a serious initiative to put into force secondary legislation and implementing regulations, and paid an emphasis on interconnection and roaming obligations. TA, interpreted its powers and duties extensive enough to render crucial regulations, i.e. reductions in access and interconnection rates, making access contracts and reference access offers aligned with legislation. That is to say, in spite of the seemingly insufficient and outdated legal framework, TA managed to issue and implement a number of critical decisions. Not only the narrow-set obligatory provisions but also loosely-formulated provisions of the Acts No. 2813 and 406 enabling TA to create competition and safeguard consumer rights have largely served to regulatory enforcement during a long period⁵². More

⁴⁹ Council of State, Department No. 13, Date: 23.01.2008, Merit Number: 2007/13576.

⁵⁰ The legal provision referred by the Court was the Article 3/a of the Act No. 406, which reads as follows:

"All telecommunication services, including the value added telecommunication services, services within the scope of supplementary article 2, and telecommunication services within the scope of monopoly rights after the expiration of such monopoly period set out in paragraph (c) of article 2 may only be provided through an authorisation agreement, a concession agreement, telecommunication licence or general authorisation as the relevant service requires"

The quoted provision has been interpreted by the Court so as to narrow the scope of licensing on the basis of the presumption that each service requires a separate licence. According to this standpoint, companies who have been awarded fixed telephony service licences, have to get another licence (e.g. general authorisation for internet service provision) in order to provide other services than fixed telephony service over fixed lines.

⁵¹ Council of State, Department No. 13, Date: 24.01.2007, Merit Number: 2005/6375, Decision Number: 2007/315.

⁵² ÜNVER, M. B., (2009), Assessment of Proposal of Electronic Communications Act in terms of Access Policy: A Critical Discussion in light of Dynamic Needs of the Industry and the EU 200

explicitly, TA hinged upon the generic-type primary legislation and relied on them in preparation and implementation of detailed regulations.

TA first issued Tariff Ordinance in August 2001⁵³, in order to set forth the regulatory principles that apply in approval and audit of the tariffs determined by the operators enjoying de jure/de facto monopoly and/or SMP (significant market power)⁵⁴. The said Ordinance is based on a tariff approval system rather than differentiated tools for the purpose of price control. Within this system is adopted a two-pronged mechanism that comprises a price cap method on the one hand⁵⁵, and method of evaluation of *cost of an efficient service provider* on the other⁵⁶. The implementing regulation incorporating the conditions that apply to access and interconnection, entitled ‘Ordinance on Access and Interconnection’ entered into force on May 23, 2003. The said Ordinance introduced the concept of ‘access’ which was not laid down in the (formerly) existing Acts, set out the access obligations, i.e. interconnection, co-location, carrier selection including the conditions to be conformed with by the access providers, put forth a detailed dispute resolution process, and empowered TA to examine the access agreements and make them aligned with the applicable legislation by ordering the parties to do so. Many of the access obligations, which were directly imposed on SMP operators under the first version of Ordinance on Access and Interconnection⁵⁷, have been later on put

Regulatory Framework, in *Prof. Dr. Ali Naim İnan’a Armağan*, ÜNAL, M., PAŞPINAR, V., OZANOĞLU, H. S. and YILMAZ, S. (eds.), Seçkin Kitabevi, Ankara, p. 878.

⁵³ Official Gazette, Date: 21.08.2001, Number: 24507.

⁵⁴ Tariff Ordinance, 2001, Article 2. While the first version of Tariffs Ordinance was covering two basic methods to regulate the tariffs of SMP operators, the final version that has entered into force on 12.11.2009 (Official Gazette, Number: 27404) pursues a differentiated approach, including four distinct regulation methods, namely, approval of tariffs on the cost-basis, price cap method, notification, and setting upper/lower limits.

⁵⁵ In order to define which tariffs are subject to approval through price cap method within the meaning of Ordinance, a Price Cap Communiqué has been put into place in 2002, which has been reviewed for several times.

⁵⁶ Whereas the first version of Tariffs Ordinance was covering two basic methods to regulate the tariffs of SMP operators, the final version that has entered into force on 12.11.2009 (Official Gazette, Number: 27404) pursues a differentiated approach incorporating four distinct regulation methods, namely, approval of tariffs on the cost-basis, price cap method, notification, and setting upper/lower limits.

⁵⁷ The first version of the Ordinance on Access and Interconnection (Official Gazette, Date: 23.05.2003, Number: 25116) was entirely changed on June 14, 2007 (Official Gazette, Date: 17.06.2007, Number: 26552) with the view to ensure an approximation with the EU Regulatory Framework. This Ordinance has been renewed in accordance with the recently enacted primary legislation. This last version that entered into force on 08.09.2009, is quite similar to the former (second) one, except with slight differences envisaged to strengthen the enforcement.

into a basket, from which TA has the discretion to choose and apply to the relevant SMP operator(s)⁵⁸.

In accordance with the Ordinance on Access and Interconnection, a tertiary regulation, entitled ‘Communiqué Regarding the Procedures and Principles on Unbundled Access to the Local Loop’ has entered into force in July 1, 2005⁵⁹. With the entry into force of the said Communiqué, Türk Telekom’s copper access network is mandated to be opened to alternative operators pursuant to a number of principles, non-discrimination, cost-orientation, transparency, etc. Likewise, the co-location and facility sharing obligations that are laid down under the Ordinance on Access and Interconnection are detailed in another implementing regulation, entitled ‘Communiqué on the Procedures and Principles regarding Co-location and Facility Sharing’⁶⁰. As well, to implement the obligation of accounting separation and cost accounting systems, TA issued a separate regulatory measure bearing the title of ‘Procedures and Principles on Accounting Separation and Cost Accounting’ in February 2004 with a transition period of two years, enabling SMP operators to establish an applicable accounting separation system.

Apart from the abovementioned regulations, TA has also issued National Roaming Ordinance, SMP Ordinance, Numbering Ordinance, Ordinance on Number Portability, Rights of Way Ordinance, Ordinance on Consumer Rights, Quality Service Ordinance, Ordinance on Data Privacy, Ordinance on Radio and Telecommunications Terminal Equipment, etc. Among these, the SMP Ordinance⁶¹ and the roadmap envisaged therein is worthy of being qualified as the baseline of Turkish regulatory regime⁶². This is why,

⁵⁸ For instance, unbundling obligation is placed under the Ordinance on Access and Interconnection as a tool available for ICTA to be imposed on relevant operators. As well, provision of access, non-discrimination, transparency, co-location, facility sharing, carrier selection, account separation and price control obligations are the other remedies foreseen in the renewed version of the Ordinance. According to the Ordinance, the regulatory authority has the discretion to impose one or more of them on SMP operators following a market analysis.

⁵⁹ Official Gazette, Date: 20.07.2004, Number: 25528.

⁶⁰ Official Gazette, Date: 31.12.2003, Number: 25333.

⁶¹ Ordinance on Procedures and Principles regarding Determination of Operators Having Significant Market Power (SMP Ordinance), Official Gazette, Date: 07.01.2007, Number: 26396. This Ordinance has been renewed in accordance with the recently enacted primary legislation explained below. The renewed version, which entered into force on 01.09.2009, is no longer different as to the main principles and procedures.

⁶² Under the SMP Ordinance, the Articles 6-8 draw up a framework to be applied in relation to the market analysis process. According to the Article 6, market analysis process consists of the following steps: (a) Definition of relevant market, (b) Analysis of competitive level in relevant market, (c) Definition of operator(s) with significant market power.

according to the legal framework drawn by this Ordinance, the principal path to follow by the regulator is imposition of remedies to SMP operators subsequent to market analysis, revealing a harmony with the EU rules. 16 wholesale/retail markets including wholesale broadband access market, for the purpose of *ex ante* regulation, have been defined in December 2005 and February 2006 (which have been undergone second round analysis in 2009)⁶³, primarily by taking into consideration the markets specified in the 2003 Recommendation of the Commission.⁶⁴

While TA's powers extended to a wide area of regulation which reveals a clear approximation with the EU rules, an increasing number of legal problems have prevailed since the enactment of Act No. 4502. Meanwhile, regulatory authority (TA), instead of hesitating or awaiting a legislative change, involved itself into a process entailing a wide range of remedies, e.g. modification of access contracts, dispute resolution awards and determination of access/interconnection fees.⁶⁵ Because of the loopholes of the (formerly) applicable Acts, i.e. lack of measures in many areas of regulation, unnecessary procedures and limitations regarding authorisation⁶⁶, an increasing need for a new Act has been echoed by many including the regulatory authority. After an eight-year implementation period of the former Acts, the need to improve the regulatory framework especially with regard to authorisation and to adopt a

⁶³ The referred markets have been again analysed in 2009, and as a result of reassessment and public consultation, the markets that are to be subject to *ex ante* regulation have been reduced to 11 as it is found that some of them have the subject-matters that are the same or quite similar with each other and this would result in overlapping and/or disproportionate remedies. For the most recent situation regarding market analysis see <http://www.btk.gov.tr/srth/piyasa-analizleri.htm>, last visited by 22.03.2010.

⁶⁴ One of the progressive steps taken by the second round market analysis documents that have been published in early 2010 is the imposition of additional remedies by ICTA. In this regard, provision of naked ADSL is determined as a new obligation imposed on Türk Telekom within the context of wholesale broadband access market (See *ibid*). This development is also in line with the Competition Authority decision dated 18.02.2009 and numbered 09-07/127-38, which gives way to detailed regulation on part of ICTA (See sub-section "4.3. The Role and Decisions of the Competition Authority").

⁶⁵ In this process, TA has had to handle the litigations brought before the national courts by operators that voiced the argument that TA's implementing regulations were clashing with the freedom to contract and liberty of ownership, which are originally guaranteed by the Turkish Constitution. Seeking relief from the obligations imposed by TA, operators, solely in field of access and pricing regimes, filed more than 200 actions against TA's measures.

⁶⁶ The restrictive character of the (former) Turkish authorisation system could be clearly seen in the class licensing system envisaged thereby. In that system, no matter there is a need to use a scarce resource for operation, authorisation was not possible without publication of an Annex to the Authorisation Ordinance that was to be followed determination of the minimum fees by Council of Ministers upon the proposal of the Ministry of Transport and finally undertakings being granted specific licences.

sound and stable primary legislation that allows regulatory interventions in a more coherent and irresistible manner has driven the government to prepare and put into force a comprehensive, up-to-date, and long-standing Act. As such, a new Proposal for Electronic Communications Act was prepared and submitted to the Parliament at the end of 2005⁶⁷. After the two year awaiting period and the following MP elections and cabinet change, which have occurred in the second half of the 2007, the Proposal for Electronic Communications Act (ECA) has again emerged on the agenda of the Parliament. Prolonging negotiations have not taken place this time, and the Proposal has entered into force on November 10, 2008.

Within the framework of ECA, a number of regulatory issues from authorisation to consumer rights are set out, many of which reveal a real progress in terms of facilitation of offering telecommunications services and networks. This is especially why with the enactment of ECA, ‘notification’ that corresponds to ‘general authorisation’ in the EU system has become enough for operators which would not need scarce resources to enter the market. Crucially, former judicial interventions blocking licensing process on the basis of provisions enshrined under the Act No. 406 would no longer be possible for the time being.

Summing up, legislative framework in Turkey is now extensive enough to devise any implementing measure and policy for the regulatory purposes including broadband issues. Thus far, ICTA has relied on secondary legislation more than the (former) Acts in realising amendment of the access/interconnection agreements, applying insistent and continuous reductions in the fees, i.e. regarding interconnection, co-location, etc., imposing amendments on wholesale reference offers. While ECA has eliminated the previous loopholes, e.g. unnecessary procedures and limitations for authorisation, and a number of safeguards for new entrants have been put in place, Turkey still has the inherent problem of lacking a widely acknowledged roadmap for boosting broadband penetration, creating high-speed platforms,

⁶⁷ After being presented to the Parliament by the Prime Ministry, the Proposal for ECA has been submitted to the General Assembly on 06.01.2006. However, the Proposal for ECA awaited approximately for two years at the Commission for Public Works and Transport (under the General Assembly), and could not be enacted before August 2008. However, President has vetoed the Proposal and required a number of modifications. Proposal re-arranged according to the required modifications was re-submitted to the General Assembly in October 2008. The final version of the Electronic Communications Act has been accepted with the majority of the Parliament, and entered into force on September 10, 2008 (See the English version of the Act No. 5809 via <http://www.tk.gov.tr/eng/duzenmaineng2.html>).

spreading out the broadband availability to the rural areas, and developing new areas of employment with broadened opportunities in digital era.

4. Analysis of Turkish Broadband Market

4.1. General Information⁶⁸

Until the end of 2003, Türk Telekom enjoyed a monopoly over all the fixed telecommunications infrastructures and voice telephony services provided through fixed networks. During the pre-liberalisation period, dial-up Internet access services were being offered by Internet Service Providers (ISPs) without an authorization. While broadband services have been opened to the ISPs via different methods after liberalisation, the same pace of authorisation could not have been achieved for voice services. Local telephony services, which have not been opened to competition during more than five years because of legal/judicial breaks, are given leeway to be offered in May 2009. To that date, alternative fixed telephony operators had the opportunity to offer international and national (inter-city) calls, taking the advantage of carrier selection or carrier pre-selection. Any numbering blocks (or numbers) to be allocated to their subscribers have not been assigned until the beginning of September 2009. Thus, their efforts were limited to use Türk Telekom's network in certain ways, lacking in important tools such as full unbundling. Notwithstanding, the number of Türk Telekom's fixed telephony subscribers has been declining since 2004 particularly owing to fixed-to-mobile substitution.

Table-1: The Number of Fixed Line Subscribers (million)

Years	2002	2003	2004	2005	2006	2007	2008	2009
Number of Fixed Subscribers	18.91	18.92	19.13	18.98	18.83	18.20	17.50	16.60

(Source: ICTA)

As could be seen from the table above, the penetration level is decreasing in a firm and steady manner. While the most recent number of 16.6 million subscribers (by the end of 2009) corresponds to 23.1% of the total population,⁶⁹ speed of the decline in penetration rate would be sharper with the

⁶⁸ All the figures and numerical details referred to under this chapter are taken from the ICTA sources, mainly from the market data regularly updated and published in <http://www.tk.gov.tr/Yayin/Yayinlar.htm>, last visited by 22.03.2010.

⁶⁹ Although the penetration rate (number of fixed line subscribers within the whole population) is relatively low, household penetration rate has reached 100 percent for many regions in Turkey due to large size of an average household. Should we take into account the fact that average household

alternative operators increasing their market share in provision of local telephony services. As a matter of fact, the decrease of both PSTN subscribers and traffic volume is closely related to the remarkable development of mobile services⁷⁰. As a result of exponential growth of mobile traffic especially subsequent to the increase in operators' flat-rate tariffs, total traffic volume (as of last quarter of 2009) has reached twice its level (as of first quarter 2008)⁷¹, and mobile penetration rate has reached to 86.2% with 62.8 million subscribers at the end of 2009. Launch of 3G services also seems to trigger development of mobile penetration and advanced data services, e.g. MMS, mobile video-call, which implicitly means more decreases in PSTN penetration on the one hand and new rivals in broadband services on the other hand⁷². Thus, the conclusive impact of fixed-to-mobile substitution is quite apparent given the growth of mobile services, which seems to have been augmented with the belated liberalisation of local telephony services, lack of naked ADSL as well as well-functioning full LLU⁷³.

On the other hand, penetration rate of both the fixed and mobile telephony services could be deemed near or above the expected level, taking into account the purchasing power parity and the level of per capita income in Turkey (approximately 8,400 USD). Given these facts, existing gap between the number of mobile/fixed line subscribers and that of the broadband subscribers (6.8 million) is worth being considered as a positive indicator for the potential competition in broadband market.

size is 4.4 then it is not wrong to say that effective penetration rate is equal to 101.64% throughout the country.

⁷⁰ For the trend of fixed and mobile traffic volumes per year see Market Data, 2009 4th Quarter, <http://www.tk.gov.tr/Yayin/Yayinlar.htm>, last visited by 22.03.2010, p. 3.

⁷¹ See *supra* note 36.

⁷² However, high-cost requiring features of 3G networks and services as well as the fact that they are mostly oriented towards corporate customers reduce their popularity and potential contribution to the overall broadband growth. See also *supra* section "1. Introduction: Following the Footprints of a Broadband Blueprint". See also ARDIYOK, Ş., (2004), *Yerel Telekomünikasyon Hizmetlerinde Rekabet, Uzmanlık Tezi, Rekabet Kurumu, Ankara*, <http://www.rekabet.gov.tr/index.php?Sayfa=tezdetay&Id=48>, last visited by 22.03.2010, p. 111, stating that "It would be expected that UMTS, like GSM, could be complementary to, but not substitutable with, local telephone network and in particular broadband access."

⁷³ However, operators have been authorised to offer local telephony services as of May 10, 2009 in accordance with the Electronic Communications Act. Similarly, naked ADSL is expected to be offered subsequent to the prospective ICTA regulations that are planned to enter into force in mid 2010 (See *infra* note 122).

Table-2: Broadband Penetration in Turkey Between 2003-2009
(per 100 inhabitants)

Years	2003	2004	2005	2006	2007	2008	2009
Broadband Penetration (per 100 inhabitants)	0.17	0.75	2.28	3.95	6.21	8.3	9.2

(Source: ICTA)

While there is a promising and serious increase in penetration of total broadband subscribers, the same success could not be mentioned for the fixed broadband penetration last year⁷⁴. Equally, homogeneity of the market is challengeable in respect of subscriber numbers of alternative ISPs. This is so because the total number of DSL subscribers (which correspond to 91% of broadband retail market) is 6,319,293 as of March 1, 2010, and 430,051 (just 6.8%) of them are the subscribers of alternative ISPs.

In fact, the predominance of TTNNet, subsidiary of Türk Telekom, is a foregone conclusion of incumbent's large investments over its DSL network, and unbalanced structure of market forces seems to have been unchanged in presence of the legal restraints which have lasted during a long period, namely until the entry into force of ECA. In fact, this picture has been aggravated with the lack of triple-play type bundle services and limited infrastructure-based competition. Fibre investments of alternative operators have not so far spread out to the country, but intensified on specified regions, particularly in metropolitan areas. Another fact harming the chance of creation of a more competitive environment is the low penetration of cable broadband. As of March 5, 2010 there is 166,156 cable modem subscribers, corresponding to 2.4% of the total number of broadband subscribers in Turkey, and this fact, in support of other afore-mentioned figures, clearly demonstrates that lack of competition both at intra- and inter platform levels is a problematic fact Turkey faces.

As implied above, concentration of the market closely relates to Türk Telekom's strategy for quick roll-out of DSL network. Historically, after an

⁷⁴ Increase rate of broadband penetration per year, which was in average equal to 54.7% during the period of 2006-2008, slowed down in the last year and became 10.8%. This retales to slowing pace of fixed (PSTN) broadband penetration increase in contrast to other technologies, particularly mobile broadband (See *supra* note 29).

unsuccessful attempt (by a joint venture)⁷⁵ to set up a national Internet backbone, Türk Telekom has undertaken the project and completed the roll-out of a backbone called TTNNet in 1999-2000. During the pre-liberalisation period, Türk Telekom's DSL subscribers were quite a few and barely reached to 56,624 and its voice customers were predominantly using dial-up to reach Internet. At that time, there was also no resale agreement (between Türk Telekom and ISPs), which had its first examples in Turkey within the year of 2004. Although broadband Internet has been initially launched over cable in Turkey, DSL usage has taken precedence with the commencement of liberalisation, which commenced at the beginning of 2004. Availability of PSTN all over the country, no need for a big upgrade expenditure for offering broadband, and government considering this matter as a part of its policy to increase the Internet coverage across the country favoured this strategy.

After a period of more than three years, during which Türk Telekom carried out its activities at both retail and wholesale levels, privatisation of Türk Telekom has appeared on the agenda of Turkish government. In the course of legal process, CA rendered a decisive opinion setting forth the prescribed conditions to be realised before privatisation, and in pursuit of a number of articulated goals enforced the process towards separation of the provision of Internet services from Türk Telekom. In the rendered opinion, the Board held that TTNNet, who has formerly been managed under Türk Telekom as a unit dedicated to offering Internet services, should be separately organised within a distinct legal entity with the view to eliminating cross-subsidy and making the relevant costs transparent. Upon this decision, in May 2006, Türk Telekom restructured itself by dedicating to wholesale Internet (access) services and by leaving the retail-level Internet services to TTNNet, whose shares and management powers have remained under control of itself. Provision of (retail) Internet services was thus transferred to TTNNet, who has started its activities as an ISP at the beginning of June 2006. TTNNet, for the time being, provides

⁷⁵ Internet services were firstly began to be offered as a dedicated 64 Kbps Internet connection between U.S. and Turkey in the scope of a project supported by The Scientific and Technological Research Council of Turkey (TÜBİTAK) on 23 April 1993. Two years later, Türk Telekom announced a tender so as to establish internet backbone for Turkey. GlobalOne, Satko and Middle East Technical University (METU) (as a consortium) were announced as the winner of the tender to set up national internet backbone called TURNET. However, all participants left the consortium as a result of insufficient development of network infrastructure, and the revenue they earned within the consortium was lower than their expectation. Finally, Türk Telekom as a sole participant in the consortium began to roll-out of a second network backbone called TTNNet in 1999-2000 to support expansion of the Internet Networks (AKPINAR, Ö. F., (2009), *What needs to be done for competitive broadband market in Turkey*, MSc Thesis, Middle East Technical University, Ankara, p. 15).

residential (dial-up, xDSL, Wi-Fi) and business (ATM, FR, Metro Ethernet) internet access services to end-users. On the other hand, Türk Telekom, providing access to its DSL network and associated facilities needed for provision of retail Internet services, is the sole provider of wholesale xDSL services to the ISPs whose number reached to 104 as of March 2010.

While the xDSL services have been offering by a multitude of ISPs, number of service providers operating over cable platform is far less in Turkey.⁷⁶ Whereas the number of Internet subscribers using cable platform was quite close to DSL users in 2003,⁷⁷ the gap widened in time as explained above. As of March 5, 2010, cable network passes 2,764,509 homes and the number of CATV subscribers is 1,157,027 which respectively correspond to 18% and 7.67% of the total number of homes. This also means waste of the resources given the fact that 58.5% of the infrastructure is unused whereby it should be noted that number of cable modem subscribers is far less than that of CATV subscribers. The current gap between DSL and cable also relates to uncertainty attributed to the cable network during the last decade, which has been eliminated fully by the entry into force of ECA, and until this stage, hindered the required investment for the upgrade of the cable network and the services to be provided over it.

Türk Telekom built the CATV infrastructure initially in 9 big cities and launched CATV services in 1991. In 1997, Türk Telekom made a decision to expand the cable network via tendering not only for provision of CATV services but also for enabling two-way transmission. In the tendering, the firms have been invited to build and operate cable infrastructure in 21 additional regions. After tendering, cable firms that have signed revenue-sharing agreements with Türk Telekom built the infrastructure in the additional regions and started to provide cable services as a sub-contractor but not a licensed operator⁷⁸. In 1998, Türk Telekom called for another tender for modernization, capacity increase and maintenance in the first 9 cities.

⁷⁶ See Market Data, 2009 4th Quarter, http://www.tk.gov.tr/Yayin/pv/ucaylik09_4.version2.pdf, p. 1).

⁷⁷ While the number of subscribers using Internet over DSL network was 56 624 in 2003, there were 42 700 Internet subscribers using cable platform in the same year.

⁷⁸ Under the revenue sharing agreements, which were signed for 10 years, upgrade, maintenance and repair of the cable network were to be carried out by the operators whereas content provision, price setting as well as regularly and daily offered services to subscribers were in charge of Türk Telekom. Not only monitoring the performance and daily decisions but also the strategy development including investment planning were being made by Türk Telekom according to the agreement.

On the basis of revenue-sharing model, first broadband offers were commenced in early 2000 and continued in collaboration with the so-called cable firms during the ten-year period as envisaged by the agreements. After revenue-sharing agreements have ended, there has arisen a debate between the parties as to the ownership of the cable networks built and upgraded in the local regions. The referred debate resulted in a court file against Türk Telekom, which was then transferred to its successor, namely Türksat. Nor have the licenses granted by the regulatory authority for cable platform services been effective due to a court decision which annulled the relevant Annex of the Authorisation Ordinance through a stringent interpretation of the former Act No. 406⁷⁹. Until re-arrangement of the so-called Annex by TA as a responsive action by narrowing it to allow formerly licensed cable firms to provide cable broadcast transmission services on an individual basis, and ultimately until the enactment of ECA, the legal uncertainty related to the cable services has continued.⁸⁰ With the entry into force of new regime under ECA, ‘notification’ that corresponds to ‘general authorisation’ in EU system⁸¹, has become enough for operators that do not need scarce resources to enter the market⁸². Since the scope of new authorisation regime is envisaged large enough to cover any

⁷⁹ See *supra* note 50.

⁸⁰ After annulment decision rendered by the Council of State, TA took action and modified (narrowed) the Ordinance Annex to allow formerly licensed cable firms to provide cable broadcast transmission services on an individual basis, namely on a legal ground exclusively designed for broadcasting. Within the legal framework designed accordingly (that has been effective until entry into force of ECA), those firms were enabled to provide voice, Internet (data) and infrastructure services providing that they conform to the each relevant Annex to the Authorisation Ordinance, and pay separate licensing fees.

⁸¹ European Council, Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive),

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0020:EN:NOT>,

last visited by 22.03.2010. Authorisation Directive envisages granting an individual licence solely where the risk of interference arising from the usage of radio frequency is significant (non-negligible) (See Authorisation Directive, Article 5/1). According to Authorisation Directive, granting individual license (*rights of use*) for making possible usage of a numbering block and/or radio frequency is subordinated to *general authorisation* pursuant to the EU legislation.

⁸² New authorisation regime brought out by ECA and new Authorisation Ordinance, ‘notification’ prevails as the principal method for authorisation, which has a great many similarities with EU *Acquis*. Accordingly, all the electronic communications networks and services, without any segmentation, have been subjected to the same authorisation conditions, according to necessity of scarce resource rather than clustering of services. Thereby, operators have been released from awaiting new class licenses and/or determination of minimum license fees by the Council of Ministers, unless there is a need to use a scarce resource (frequency and/or a numbering block). That is to say, former judicial interventions blocking licensing on the ground of the narrow scope of the Act and prohibiting triple-play services under a single class licence would no longer be possible within the framework of new authorisation regime.

electronic communications networks and services, the cable firms whose licenses were invalidated by judiciary could now act upon notification and offer cable services, e.g. voice, data, broadcasting in the new legal environment of ECA which obviated former licensing procedures.

The lack of predictability and the notorious history of cable services that has affected broadband competition between two platforms are seemingly related to lack of a projection in this area.⁸³ However, privatisation of Türk Telekom's arm of cable services appeared to be solution, especially on side of CA. Just before the uneven developments explained above, the government intended to privatise Türk Telekom including its cable business arm, and to that end applied to CA in accordance with the Competition Act No. 4054. CA, considering the need to keep the Cable TV infrastructure separate from Türk Telekom's operation and ownership, and the privatisation process, and having regard to the potential benefits arising out of competition between two rival platforms, e.g. DSL and cable, prescribed that the Cable TV infrastructure, covering all rights to own and operate it, should be organized as a distinct legal entity within a year following transfer of the ownership of Türk Telekom.⁸⁴ Correspondingly, in advance of Türk Telekom's privatisation, namely in April 2005, the statutory right to provide all the (retail/wholesale) cable services was transferred to Türksat, a state-owned satellite company.

For five years, CATV infrastructure and its affiliated services have been operating by Türksat, without any competitive threat originating from the same network. While other networks, e.g., mobile, DSL pose some difficulties against cable services in terms of price competition and service availability, this fact does not radically change the Türksat's policy, for instance does not drive itself marketing breakthrough services such as IPTV using numerous advantages peculiar to cable network such as data speed, technical efficiencies, etc⁸⁵. Given this fact, transfer of cable ownership to Türksat, though marking an important

⁸³ Special features and main drawbacks of cable platform including would-be effects of its growth and privatisation on the inter-platform competition, see STATE PLANNING ORGANISATION, 9th Development Plan, Special Expertise Commission Report, (2006), <http://www.bilgitoplumu.gov.tr/Portal.aspx?value=UE9SVEFMSUO9MSZOQUdFSUQ9MTQwJIBBR0VWRVJTSU9OPS0xJk1PREU9UFVCTEITSEVEX1ZFUNJT04=>, last visited by 22.03.2010, p. 91-95).

⁸⁴ Competition Board Decision, Date: 21.07.2005, No: 05-48/681-17 (Final Decision Notification). CA, who has formerly rendered its opinion in advance of open auction (privatisation) tendering, gave its final opinion (*Ibid.*) in line with its former view, after being asked to do so subsequent to the completion of the tendering process. For information about the tendering process, including all the exchange of views between the competent authorities and the CA's opinions sent to the Privatisation Administration of Prime Ministry, see *ibid.*

⁸⁵ Cave and Huigen, 2008, p. 716; Crandall, 2005, p. 159-161.

achievement, does not suffice to boost broadband competition and should be followed by privatisation that has been prevailing within the agenda of Ministry for a couple of years⁸⁶. Government, whilst revealing its intention to privatise Türksat, has not yet announced a schedule for that purpose. Unless it is announced in the short term, the rivalry between mobile and fixed networks that seems to be more fierce in the coming years, would easily supersede other possible competitive threats and technologies including cable broadband.

4.2. Regulatory Landscape and Cornerstone Developments

As in many EU countries, provision of broadband xDSL services has started in Turkey via resale agreements between Türk Telekom and ISPs, which traces back to February 2004. To provide xDSL services Türk Telekom attempted to install 60,000 ADSL ports in the last quarter of 2003. ISPs also sought a share between those potential lines, and after failure to reach an agreement with Türk Telekom, applied to both CA and TA (ex-ITCA). While TA concentrated on how to allocate those ports between the parties, CA took an earlier and complementary step, holding that Türk Telekom should suspend acquiring new ADSL subscriptions until TA has come up with a regulation on how the ADSL ports were to be made available to the independent ISPs. TA concluded that ISPs that were to act as a reseller were to be allocated 5,000 ports by leaving a margin of 18% between retail and wholesale prices⁸⁷. As of November 2004, the number of the ISPs operating under resale agreement was 11.

In the face of Türk Telekom's installing additional ports and its allegedly non-discriminatory acts as to allocating them, ISPs' complaints have re-emerged, and they applied to CA and TA again, this time with the demand that bitstream access be launched as an alternative model. Upon these developments, TA has made a decision to stipulate bitstream access at the IP level, and ordered Türk Telekom to propose a wholesale tariff for bitstream access in June 2004. After evaluating the tariff proposed by Türk Telekom, TA approved the tariff by modifying it so as to ensure the margin to be left to ISPs to fall between 41-50%. However, Türk Telekom has appealed to the Court, asserting that TA has approved the tariff by amending it, which it alleged contradictory with the applicable legislation, namely Tariff Ordinance. In the manner postulated by Türk Telekom, the Court has released an interim relief

⁸⁶ For similar views, see KILIÇ, T., (2007), *The Impacts of Competition and Regulation on the Pricing of Broadband Services*, MA Dissertation, University of Westminster, London, p. 71. Privatisation of cable network is also advised as one of the policy tools in achieving the 2013 vision of the 9th Development Plan of Republic of Turkey (See State Planning Organisation, 9th Development Plan, Special Expertise Commission Report, 2006, p. 94).

⁸⁷ The allowed margin has been criticized, and the ISPs have brought the TA's decision before the Council of State, which ultimately upheld the regulatory decision.

stopping the enforceability of the tariff in February 2005 and finally annulled it in July 2005. During the proceedings, TA and Türk Telekom reached a consensus by readjusting the margin (between retail and IP-level bitstream access prices) to the levels between 29-35%. Before the final judgement of the Court⁸⁸, TA approved the said amicably-set tariff for IP-level bitstream access in July 2005. Notwithstanding, the ISPs and Türk Telekom could not have reached an agreement on the issues other than tariffs, and applied to TA for the resolution of the dispute. The privatization process, which has taken place in November 2005, also prolonged reaching to agreement. Despite TA's stipulation in March 2006 that the parties submit their draft agreements in a specified timeframe, Türk Telekom's insistence on its deal and other technical details led to first bitstream access agreement being signed in February 2007.

On the other hand, TA issued a Regulation entitled "Communiqué on Procedures and Principles regarding Unbundled Access to the Local Loop" (LLU Communiqué) in order to boost broadband competition, to enrich the available methods for alternative operators to market their products, and to create a more sustainable playing field in the long run. The concern to comply with the EU *Acquis* has also influenced the policy making process. Though the LLU Communiqué has been published in 20.07.2004 it has entered into force by 01.07.2005. In fact, publication of the Reference Unbundling Offer (RUO) as of 22.11.2006 following approval by TA gave the way to LLU emerging as a distinct model built on a set of technical and economic details.

In the context of RUO, initially three big exchanges were chosen as pilot places, and it was set forth that *additional* LLU switches that were to be available per three months were to be determined by adding 2 to the existing number ("n", which was 3 at the beginning) of opened switches.⁸⁹ The monthly rental fees were set respectively as 20 TL for full unbundling and 6.75 TL for shared access initially (by the date of 22.11.2006)⁹⁰. The said prices were

⁸⁸ The final judgment envisaged annulment of the TA's decision in line with the interim relief. However, in March 2009, Council of State, Department No. 13 rendered the final decision as to the case, after being in charge of the case subsequent to a decision of "lack of jurisdiction". In the final decision, the Council of State, overruling the former judgment, held that in the event that there is a real possibility causing delay for provision of the related service, the regulator has the right to approve the proposed tariff after amending it on objective grounds.

⁸⁹ This formula that could be summarised as "n+2" ensured opening of LLU switches in an exponential way, and finally transformed into "n+5" in February 2009, having far-reaching potential results (See *infra* "Table 4: Number of additional LLU switches available to alternative operators between February 2009-February 2011").

⁹⁰ Such fees respectively correspond to 10.5 €/month and 3.55 €/month according to the prevailing exchange rate.

further reduced, respectively, to 17 TL and 5.75 TL on 01.08.2007.⁹¹ This reduction culminated a price level that is quite low comparing to the EU average (10.88 €/month for full unbundling, 4.13 €/month for shared access).⁹² Such steps, which are worth being considered serious achievement(s) on the way of LLU progress and broadband competition, have brought out its fruits with an increasing number of LLU agreements, which reached to ten in early 2008⁹³.

However, LLU has not been so attractive in economic terms owing to a number of reasons, among which the obtrusive difference between Türk Telekom's (most prevailing) retail PSTN monthly rental fee (11.15 TL) and the full unbundling (monthly rental) fee seems to be the most obstructive one. ICTA, -besides other major parameters- taking into consideration the *negative* margin between the former and the latter⁹⁴, has lastly intervened to the LLU prices and decreased them including the connection (one-off) fees⁹⁵. After the reduction put into force as of June 11, 2009, the full unbundling monthly rental fee has become 15.3 TL⁹⁶ while the shared access fee has remained the same.

Despite the fact that more aggressive regulatory steps were taken for LLU, bitstream access and resale were deliberately chosen by ISPs that seemed to intensify market penetration first. It is also arguable that rather high entry costs and abovementioned legal/judicial breaks, e.g. regarding authorization, have prevented ISPs from investing much more into LLU thus far. On top of these facts, the promotional prices that are envisaged by Türk Telekom particularly towards connection fees of bitstream access and resale (e.g. lifting

⁹¹ Such fees respectively correspond to 8.02 €/month and 2.71 €/month according to the prevailing exchange rate.

⁹² EU Commission, (2009), Commission Staff Working Document, Progress Report on the Single European Electronic Communications Market (14th Report), Volume 1, p, 44-45, http://ec.europa.eu/information_society/policy/ecomms/library/communications_reports/annualreports/14th/index_en.htm, last visited by 22.03.2010.

⁹³ TA has examined the said agreements according to the applicable legislation, and ordered to the parties to omit or change anti-competitive, restrictive, and unfair terms and conditions pursuant to the LLU Communiqué. Accordingly the parties prepared and signed additional protocols incorporating the revisions required by TA in March 2008.

⁹⁴ In case of negative margin, an offsetting traffic (including both broadband and narrowband) volume is required on part of ISPs to meet the price difference between the full unbundling price and Türk Telekom's fixed monthly fee; and this means only larger alternative operators with an economies of scale could enter the voice market and market their products without incurring a deficit.

⁹⁵ The firstly approved connection fees for full unbundling and shared access were 100 TL and 110 TL by the date of 22.11.2006. By the date of June 11, 2009, these fees have been decreased respectively at rates of 32% and 33%, and become 68 TL and 74 TL.

⁹⁶ Such fee corresponds to 7.07 €/month according to the prevailing exchange rate.

these fees for a certain period) also affected the strategic behaviours of ISPs⁹⁷. On the whole, ISPs' short-term strategies towards capturing market penetration, their inability to offer local telephony services during a period of near two years (since January 2008)⁹⁸, and the promotional prices applied in favour of other access models harnessed the LLU development. Accordingly, the total number of LLU subscribers could not exceed 15,000 while the bitstream access and resale subscribers reached 6.3 million as of March 1, 2010 (See the Table-3).

Table-3: Distribution of LLU, Bitstream Access and Resale in the Broadband Market (according to the number of DSL subscribers)

Access Model	Number of Operators	Market Share
Simple Resale	25	0.11%
Bitstream Access	13	99.65%
LLU	10	0.23%

(Source: ICTA)

Ironically, for the time being LLU prices finally set by ICTA not only reveal lower prices than EU average rates but also allow competition with operators that have chosen other models, e.g. bitstream access, simple resale. Given this situation and the fact that lowering LLU prices more sharply seems hardly possible against the comparable fees applied across EU, one could consider that in order to effectively compete with Türk Telekom's voice services, flat-rate bundled services (e.g. offering broadband and voice services together) are going to be the eventual solution for alternative operators. As a matter of fact considering that the local telephony services could be offered by alternative operators subsequent to renewal of authorisation regime and the following regulations of ICTA respectively in May and October 2009, dependence on LLU would be an effective solution for bundle services.⁹⁹ As

⁹⁷ However, ICTA intervened the last promotions envisaged (to be applied within the first half of 2010) by Türk Telekom for bitstream access and resale, e.g. regarding Metro Ethernet connectivity fees, monthly rental fees, connection fees, and ensured that similar promotions were to be applied to LLU operators.

⁹⁸ See *supra* note 49.

⁹⁹ The accompanying step of fixed number portability which commenced by 10.10.2009, and the resolution of the problems related to call termination on fixed networks separately owned by alternative operators also created a clearer picture against alternative operators. Both the fixed number portability that is supposed to be accelerated with the LLU roll-out and the prospective migration process between DSL operators, which extends to other models and IT configurations and would therefore take a longer time, are the potential leverages that would make LLU operators

such it seems more apparent that success of LLU operators depends on their performance in marketing bundle services, which would enable them to have a sufficient rate-of-return.

On the other hand, the technical and economic details that apply to access models including LLU are monitored, and if necessary modified by ICTA every year. In reshaping the regulatory environment and the access models available in Turkey, reference wholesale offers approved by ICTA have so far played a critical role, having a functionality to represent the policy signals that are going to be given by ICTA. Türk Telekom, in accordance with the applicable legislation, has thus far been and is currently, obliged to prepare and send wholesale reference offers for IP-level bitstream access, simple resale, and LLU¹⁰⁰. By approving the first reference offers for bitstream access and resale, ICTA also ordered Türk Telekom to prepare a new reference offer at the ATM level until the end of 2007.¹⁰¹ After a reference offer for ATM-level bitstream access has been submitted to ICTA, it has been approved in March 2009 due to the long-lasting assessments and discussions, and finally entered into force in July 1, 2009. Within this Reference Offer, basically, resale minus method has been followed through evaluating the capacity used, backhaul usage, etc., namely by reducing such type of transactional costs from the wholesale resale prices; and additionally, determining separate access charges per DSLAM that alternative operators are to be connected to perform ATM-level bitstream access¹⁰². On the other hand, charging per DSLAM is not applied in the Reference Offer for IP-level bitstream access, whereby just a price mainly calculated on the basis of resale minus method is determined. In calculation of resale prices, which constitute the baseline for calculation of ATM/IP-level bitstream prices, a value that is around 18% of the retail price is deducted¹⁰³. It is critical that reasonable tariffs are set and implemented between each wholesale access model in order to enable ISPs to actively operate in the retail market and

reach a critical mass. By then, elimination of a few remaining technical hurdles will take place, leaving behind no technical or economic impediment against LLU development.

¹⁰⁰ In January 2010, Türk Telekom was additionally required to prepare and submit reference access offers with regard to a number of newly decided services, namely wholesale line rental, leased lines including partial private circuits and Metro Ethernet, ATM, F/R.

¹⁰¹ For the difference between ATM and IP level bitstream access models, including description of simple resale, see Yalçın, 2009, p. 16; and Kılıç, 2007, p. 29-30.

¹⁰² See Yalçın, 2009, p. 58. In this regard, new entrants that establish their business plan so as to reach economies of scale for a particular DSLAM might pay the access charge per DSLAM (approximately 1,000 TL, €500) and achieve efficiency through an increase in the number of their customers connected to that particular DSLAM (Yalçın, 2009, p. 58-59).

¹⁰³ DİKİCİ, M., (2009), *Toptan Genişbant Erişim Modellerinde Ücretlendirme Politikası: Yatırım Merdiveni Yaklaşımı Işığında Analitik Bir İnceleme ve Türkiye İçin Öneriler*, Uzmanlık Tezi, Bilgi Teknolojileri ve İletişim Kurumu, Ankara, p. 197 and 232.

to migrate between models, preferably following the sequence from resale to bitstream access and LLU¹⁰⁴.

Ostensibly, since alternative ISPs have been investing into IP network from a couple of years, and market parameters show an inclination towards IP-level bitstream, there has arisen no demand towards ATM-level bitstream access and no agreement between Türk Telekom ISPs has been signed for this access model. In any way, approval of each reference offer and prices per access model results in an environment where alternative operators have the chance to apply any data rate depending on their customer expectations and business plans. In this regard, availability of different options, namely inter-model competition on DSL network for alternative operators is supposed to increase the options of end-users in selecting the broadband provider and data package¹⁰⁵.

Affecting all the existing wholesale reference offers, ICTA has made a big step towards creation of a competitive environment for infrastructure deployments. In June 2008, ICTA ordered Türk Telekom to submit a facility sharing annex to the wholesale reference offers, aiming to enable alternative operators to deploy their infrastructure throughout the Türk Telekom's underground and aerial facilities towards specific aims, namely for bitstream access, interconnection and LLU. After the approval of the so-called Annex, operators' access to the aerial and underground infrastructure, e.g. ducts, manholes controlled by Türk Telekom has been rendered possible, and applicable terms and conditions have been set out. For the time being, operators have the opportunity to take the benefit to rely on their respective F/O infrastructure between their switches and Türk Telekom's exchanges via facility sharing. In this context, they could apply to Türk Telekom not only for ensuring their cable connections to the Türk Telekom's zero manholes (e.g. backhaul connections) but also for using the transmission grids between exchanges towards the said specific aims.

The given opportunities for sharing of incumbent's aerial/underground facilities including physical co-location are promising, specifically during market entrance period. Yet, a number of pre-conditions are prescribed for operators invoking such opportunities with the view not to cause disproportionate results. First and foremost, access seekers require infrastructure

¹⁰⁴ For the levels of applicable wholesale tariffs in Turkey, margins between them, evaluations on pricing methodologies pertaining to each access model, e.g. ATM/IP-level bitstream access, LLU, resale services with particular aim to examine the ways to ensure migration towards more infrastructure-based models (such as LLU) within the meaning of 'ladder of investment' approach, see Dikici, 2009, p. 189-217.

¹⁰⁵ See Yalçın, 2009, p. 57.

authorisation to build their own infrastructure and to make them available to third parties, namely other operators. Second, the authorised operators that seek to benefit from facility sharing ought to have either bitstream or LLU connections or should originate/terminate calls (make interconnection) within the Türk Telekom's exchanges which they want to access via facility sharing. Last but not least, facility sharing should be technically possible, and any capacity restraint ought not to exist for meeting the request.

While the IP/ATM-level bitstream access prices have been evaluated and approved via resale minus method, monthly prices for access to the local loop including those of facility sharing have been approved via benchmark predominantly¹⁰⁶. The local loop prices have been paid great attention by ICTA, on the ground that they are crucial to compete in the broadband retail market with comparably high-speed, innovative, advanced services via LLU, which represents an important milestone for product differentiation on part of ISPs. The regulator has shown its determination to make LLU well-grown and highly preferable in the eyes of alternative operators by cutting the full unbundling prices by 23.5% during the last two years. To similar ends, ICTA, taking another step to facilitate LLU roll-out, has reduced the prices for co-location, which is an unseparable input for LLU operation, three times since November 2006¹⁰⁷.

4.3. The Role and Decisions of the Competition Authority

Within the meaning of ECA, ICTA has principally been entrusted *ex ante* powers to remedy market failures. However, its power to take the remedies so as to ensure a competitive marketplace has been set quite vigorously therein, which one could figure entailing *ex post* obligations. ICTA has also thus far considered itself powerful enough to pursue investigation with regard to competition breaches and to take the necessary remedies to that end. On the other hand, CA is entrusted with the general power to investigate all kinds of competition breaches that are *ex post* characterised. Whereas ICTA is responsible for removal of barriers that would prevent entry into the electronic communications markets and optimisation of the access-related conditions to ensure effective competition in the marketplace, CA is in charge of identifying anticompetitive agreements between undertakings, abusive behaviours of dominant undertakings, and controlling mergers and acquisitions which would affect

¹⁰⁶ See Dikici, 2009, p. 192.

¹⁰⁷ As of November 22, 2006, co-location prices applicable at Türk Telekom's exchanges (in metropolitan areas) have been reduced from 385 TL/m² to 186 TL/m², and brought to the level of 111 TL/m² as of February 20, 2008. By means of such reductions, co-location prices have been declined by 71% since November 2006.

competition. CA, in the course of issuing decisions and performing its duties, e.g. regarding abusive behaviours, concerted actions, mergers/acquisitions is under legal obligation to primarily take account of ICTA's view and its implementing regulations.¹⁰⁸

The competences and duties of the CA are governed by the Act on Protection of Competition¹⁰⁹ (Competition Act). Competition Act prohibits agreements and concerted practices that restrain competition (Article 4) as well as abuses of dominant position (Article 6), and delegates CA to release of negative clearances for mergers/acquisitions (Article 7). Crucially, the most influential competition files concerning electronic communications markets have taken place surrounding implementation of the Article 6, namely CA's decisions identifying abusive practices of dominant operators. In respect of Internet service provision and determination of access conditions, CA's investigations have so far culminated with a number of condemnations towards Türk Telekom's exclusionary and exploitative acts.

One of the most critical CA's decisions related to Internet access conditions was the TISSAD (Association of Internet Service Providers) decision¹¹⁰. In the file brought before the Authority, Türk Telekom acting as the legal monopoly in provision of all the fixed telecommunications services/infrastructure was accused of abuse of dominant position in wholesale markets controlled by itself. The accusations were relating to Türk Telekom's pricing behaviours, i.e. predatory pricing by doubling the tariffs of leased lines used by ISPs; as well as refusal to make available the Primary Rate Interface (PRI) lines to ISPs by inciting them to rent virtual points of presence (PoPs) within its TTNNet backbone. In that regard, TISSAD representing the aggrieved parties claimed that Türk Telekom limited the amount of capacity to be leased to undertakings using the cable TV infrastructure, giving prominence to TTNNet branded retail services; and complained about increased royalties paid by satellite earth station operators.

Holding that Türk Telekom was dominant in the market that comprised the necessary infrastructure for the provision of Internet access services, the Competition Board found that Türk Telekom infringed Article 6 of the Competition Act for determining the charges of services provided under the name of TTNNet to its users below the charges which it applied to competing

¹⁰⁸ Electronic Communications Act, Date: 10.11.2008, No: 5809, Article 7 (2).

¹⁰⁹ Official Gazette, Date: 07.12.1994, Number: 4054.

¹¹⁰ Competition Board's Decision, Date: 02.10/2002, No: 02-60/755-305.

undertakings in the same market¹¹¹. The Board also found increases in royalties paid by satellite earth station operators anti-competitive, underlying that such increases had the effect of suppressing competitors that were carrying out their activities under revenue-sharing before licensing (in August 2002) having had to rely on Türk Telekom's international fibre optic lines.¹¹² The Board, pointing to the fact that cable modem subscribers were quite a few at the time, and considering Türk Telekom's intention and future business plan concerning granting access over its cable network, did not condemn it for allegedly limitation of cable capacity¹¹³. Türk Telekom's refusal to rent PRI lines was not also found as abusive as the sharing of virtual PoPs was deemed adequate by the Board against the competitive backdrop for Internet services at the time. On the whole, the Board has imposed a fine of 1.136 million Turkish Liras (near 690 thousand USD at the prevailing exchange rate) for Türk Telekom's infringement.

Furthermore, Türk Telekom's cable network became the subject-matter of CA's investigation(s) in an exclusive manner. Crucially, to the end of opening up cable network (formerly owned by Türk Telekom), both CA and TA have issued decisions so far. Türk Telekom, who was asked respectively by CA and TA to open its cable network to alternative operators, did not take any action accordingly, and intensified its investments on DSL network. CA, in June 2001, rendered a interim relief decision, stating that "Türk Telekom, who holds dominant position in Internet infrastructure market, should open up Internet access (including xDSL Internet access opportunity) through its cable network in case of demand(s) made by ISPs, via the facilities TTNNet takes the benefit, within the reasonable and technically feasible conditions, in a manner not to be discriminatory."¹¹⁴. Türk Telekom's inaction in spite of the decisions of two

¹¹¹ The Board held that residential narrowband dial-up tariffs were largely below the cost of infrastructure elements that ISPs had to lease from Türk Telekom, making it impossible for ISPs to survive in the market. Similarly, the tariffs of leased lines provided by Türk Telekom to ISPs were found by the Board as significantly higher than the tariffs that Türk Telekom, under the name of TTNNet, applied to corporate Internet users.

¹¹² Such increases, which were found anticompetitive by the Board, could be deemed excessive prices within the meaning of competition law, pursuant to the wording used by the Board (TOPKAYA, F., (2003), *Telekomünikasyon Sektöründe Erişim Sorunları*, Uzmanlık Tezi, Rekabet Kurumu, Ankara, <http://www.rekabet.gov.tr/index.php?Sayfa=tezdetay&Id=22> , last visited by 22.03.2010, p. 57). It is also argued that such increases have been found by the Board as constituting cross-subsidy (*Ibid*).

¹¹³ However, no cable platform operation licenses has been granted because of the interim decision of the Court of Council in February 2007, and third party access to the cable platform thus has not been figured in the agenda of Türk Telekom (or Türksat, its successor). (See *supra* note 51).

¹¹⁴ Competition Board Decision, Date: 21.06.2001, No: 01-28/273-M, Article 3. Similarly, CA investigated Türk Telekom's actions in the cable market that were asserted by ISPs to be

Authorities¹¹⁵ aggravated the legal impediments and uncertainties faced by cable firms, leading to a critical environment lacking inter-platform competition.

After a comparably long period, CA has issued another important decision in November 2008¹¹⁶, towards solving accumulated pricing problems in association with Türk Telekom's DSL network, and demonstrated both its keeping up to date with the latest developments in the industry and its ability to invoke drastic measures where necessary. The referred decision dated November 25, 2008, is based on CA's investigation during the period November 2006 - March 2008 over the pricing strategies of Türk Telekom and TTNNet in the market for wholesale and retail broadband Internet access markets. These operators were deemed by the Competition Board as constituting an *economic unit*, namely a single undertaking in terms of competition law enforcement. Pursuant to the decision, the economic unit has abused its dominant position by leveraging of its market power in the wholesale broadband Internet access market to the retail broadband Internet access market by means of price squeezing.

The pricing behaviours of Türk Telekom and TTNNet have been challenged on the basis of a price squeeze test inspired from the decisions of European Commission, namely *Telefonica*¹¹⁷, *Deutsche Telekom*¹¹⁸, and *Wanadoo*¹¹⁹. CA reached the decision that the so-called economic unit has abused its dominance by conducting price squeeze after it has analysed TTNNet's transactional costs with particular respect to the margin between the wholesale

anticompetitive, and found that Türk Telekom violated its dominant position but did not render a penalty (See ARDIYOK, Ş. and OĞUZ, F., (2009), Competition law and regulation in the Turkish telecommunications industry, Friends or foes?, *Telecommunications Policy*, doi: 10.1016/j.telpol.2009.10.002, p. 8-9, citing Competition Board Decision, Date: 10.02.2005, No: 05-10/81-30).

¹¹⁵ TA, similarly with CA, imposed an access obligation (open access remedy) on Türk Telekom to the technically feasible extent, in March 2002 (Telecommunications Board Decision, Date: 28.03.2002, No: 2002/117, Article (g)).

¹¹⁶ Competition Board Decision, Date: 19.11.2008, No: 08-65/1055-411.

¹¹⁷ Summary of the Commission Decision of 4 July 2007 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/38.784 - *Wanadoo España v Telefónica*), <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:083:0006:0009:EN:PDF>, last visited by 22.03.2010.

¹¹⁸ Commission Decision of 21 May 2003 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-1/37.451, 37.578, 37.579 - *Deutsche Telekom AG*), <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62003A0271:EN:HTML>, last visited by 22.03.2010.

¹¹⁹ Commission Decision of 16 July 2003 relating to a proceeding under Article 82 of the EC Treaty (COMP/38.233 - *Wanadoo Interactive*), <http://ec.europa.eu/competition/antitrust/cases/decisions/38233/en.pdf>, last visited by 22.03.2010.

and retail broadband prices. Considering the entry level price that is the most prevailing end-user tariff and the three year distributed transactional costs (on the wholesale basis) incurred by TNet, the Board found that there has occurred a negative margin at the end of three-year, which means no room being left to other ISPs to carry out their activities.¹²⁰ In conclusion, the Board found that the economic unit comprising Türk Telekom and TNet abused its dominant position in wholesale broadband Internet access market by means of price squeeze in retail broadband Internet access market, and imposed on the so-called economic unit an administrative fine equal to 12,394,781.16 TL (near 7.85 million USD at the prevailing exchange rate) for the infringement in question.¹²¹

The most recent step taken by CA in field of broadband networks and services is the naked ADSL decision dated February 18, 2009¹²². Acting upon various applications arising out of the complaint that being an Internet subscriber is impossible without voice telephony subscription which is asserted as a fault of Türk Telekom, the Board took a rather aggressive decision. The Board, in its decision, ordered Türk Telekom to launch naked ADSL and required it to apply ICTA in order to initiate the relevant process at most in three months following the decision¹²³. This means an obligation imposed on Türk Telekom to prepare new wholesale broadband tariff(s) in the form of naked ADSL (that no longer requires subscription of a Türk Telekom voice tariff), subject to approval of ICTA. Though Türk Telekom took a reluctance attitude in the expected manner, its tariff proposal has arrived to ICTA for the necessary procedures to be followed pursuant to the applicable legislation. ICTA made the proposed wholesale naked ADSL tariff available in its website for public consultation in January 2010, and commenced its evaluation in light of the gathered views and suggestions. According to the ICTA's 2010 Working Plan, introduction of naked ADSL could be expected to be introduced in the second half of 2010¹²⁴. While currently the procedure is being implemented by ICTA within the context of bistream access model and the relevant reference

¹²⁰ Competition Board Decision, (November 2008), *supra* note 116, p. 68-75.

¹²¹ In addition to finding of margin squeeze, allegedly discriminatory acts in relation to allocation of ports, namely delaying and/or partially meeting port installation requests of other ISPs than TNet and forcing them to incur a portion of the costs met by Türk Telekom for installation of the ports also attracted CA's attention during the investigation phase, but they were not affirmed to amount to an abusive behaviour within the meaning of the Article 6 of the Competition Act (Competition Board Decision, November 2008, *supra* note 114, p. 114).

¹²² Competition Board Decision, Date: 18.02.2009, No: 09-07/127-38.

¹²³ The Board neither penalised Türk Telekom nor began an investigation, but made a decision to initiate the naked ADSL process by mandating Türk Telekom to submit an application to ICTA, upon finding existence of an abuse of dominant position.

¹²⁴ ICTA, 2010 Work Plan, <http://www.tk.gov.tr/Yayin/Yayinlar.htm>, last visited by 22.03.2010, p. 42.

offer, it is notable that initiation of the process traces back to CA's decision in February 2009. This decision is to be noted as an important milestone in respect of facilitated broadband take up, diversity of consumer choices, and increase of broadband fixed subscribers which has been demonstrating a downward trend for a while.

This step and initiative taken by CA bears far-reaching implications for broadband business models in Turkey. The mostly expected outcome would be increase of VoIP based services after commercialisation of naked ADSL. Furthermore, emergence of new broadband packages including bundle services, especially where voice telephony services unfettered from regulation accompany naked ADSL. Thus, late 2010 and early 2011 would reveal a number of distinct models to be adopted by ISPs, i.e. from low profile naked ADSL services to more advanced triple-play packages. On the other hand, CA decision, representing a complementary remedy nearby TA's measures, is to be deemed a cornerstone for both CA and TA in terms of prospective coordinative steps and closer co-operation in future.¹²⁵ Though the individually set rules draw distinct roadmaps for each Authority, the recently decisions of CA (rendered in November 2008 and February 2009) represent important milestones not only for a collaborative perspective (especially in cases of legal restraints for a regulatory step) but also with respect to glimmering of ideas for broadband policies.

In terms of broadband policies, ICTA's role has so far been mainly to impose access obligations and then evaluate and approve the relevant reference wholesale offers that consist of conditions and prices to offer broadband services. The Authority has faced many problems which sometimes it could not have coped with the tools in its hand. The Competition Authority's recent decisions, in general do complement and even reinforce them towards the aim to achieve workable competition in the marketplace. Thus, though conceivable as a pro-active regulatory type measure, naked ADSL decision is a clear step forward in achieving competitive safeguards for market players and consumers. This is in line with what Turkey, having an underdeveloped broadband market, needs in the short and mid-term. From this juncture point of view, stronger cooperation and more check-balances¹²⁶ between CA and ICTA would create more productive results in the coming years which would witness more complicated, multi-dimensional relationships in electronic communications

¹²⁵ For elaboration of the complementary nature of competition law remedies with particular regard to the situation in Turkey, e.g. decisions of CA and ICTA, see Ardiyok and Oğuz, 2009.

¹²⁶ See State Planning Organisation, 9th Development Plan (2007-2013), Special Expertise Commission Report, 2006, p. 78.

markets. Such a fruitful environment would lessen the concerns each Authority has in its mind, ensure clearer and mutually-given signals being sent out towards the industry, and ultimately result in concrete steps and collaborative actions into which broadband matters are much more and easily integrated. From this point of view, renewal of the Coordination Protocol dated September 23, 2002¹²⁷, and stepping furthermore towards new goals of broadband blueprint would be no dream.

5. Existing Regulatory Measures vs. Further Policy Tools

In Turkey, as explained above, alternative operators have had an increasing number of opportunities that would stimulate broadband competition, during the second half of last decade. For the time being, most of the ISPs do not only choose up one individual access model, and combine two or more in order to achieve the critical mass first and have an entrenched subscriber base. Many of them compete in the voice market, whilst trying to take up broadband customers as well. A few, intensifying their works towards long-term projects, incline to invest in F/O infrastructure with particular interest to the newly-built apartment blocks¹²⁸. LLU, via which the first subscribers have been achieved in January 2008, needs to have a faster growth pace to compete against the entrenched model, e.g. bitstream access. While two operators (Koç.net, Superonline) have had access to most of the available LLU exchanges and deployed their DSLAMs

¹²⁷ The procedures and principles enshrined in the 2002 Protocol were determined to ensure cooperation in respect of implementing regulations of each Authority, i.e. investigations, mergers/acquisitions, exemptions/negative clearances and secondary regulations. However, the Protocol has not brought out the expected results in terms of coordinative steps and devising of competition policies for relevant markets because each party took a cautious and sceptical attitude in the process, and refrained from active collaboration. On the other hand, a better mutual understanding is taking place between the parties in recent years. The evolving tendency now is that CA does not investigate allegations of competition law violations when actions in question are in areas regulated by TA (Atiyas and Doğan, 2007, p. 504). For the same conclusion after elaborating historical and legal developments with regard to the interrelationship between each Authority, see Ardyok and Oğuz, 2009, p. 6.

¹²⁸ In this regard, the biggest F/O investment has so far been done by Superonline (Tellcom), who has been offering FTTB (fibre-to-the-building) on an increasingly wide scale. As of February 2009 the number of its FTTB subscribers was around 10,000 and reached 54.3 thousand in mid January 2010. One of the latest successful attempts of Superonline was covering the distance between Ankara (the capital) and İzmir (the third biggest city in Turkey) with its F/O infrastructure in support of Ericsson. (See <http://www.kurumsalhaberler.com/ericsson/bultenler/tellcom-fibre-optik-altyapisinda-ankara-izmir-arasini-ericsson-ile-birlestirdi/>, last visited by 22.03.2010). Finally, after a tendering process, Superonline has gained the right to rent Botaş (Pipe Lines and Oil Transmission Inc.) fibre infrastructure for a period 15 years, in return for 20.9 million Euro (See <http://www.superonline.com/haber/ipek-yolu-fibre-yolu-olacak-73272>, last visited by 22.03.2010).

in there, the remaining ISPs have established their business models on the IP-level bitstream access with a few exceptions preferring simple resale (0.1%).

It is remarkable that almost all the operators carrying out activities in Turkish telecom industry do wish to have a stable and invulnerable position in the under-penetrated Turkish broadband market. However, most of them rely on Türk Telekom's existing network and technologies, instead of long-term investments, which could also be inferred from the Table-3. The newly emerging VDSL2 and FTTx services, which have been launched respectively by TTNNet and Superonline on a limited basis, do not promise a big and country-wide growth in the short term. While only a very small portion of the subscribers is addressed by the so-called emerging services the LLU roll-out would compensate this picture at least for the predictable future, considering that RUO drew a two-year projection whereby 58% of the whole PSTN subscribers would have been made accessible via LLU in February 2011. The table below shows the number of LLU switches and the rate of increase (per year) in the envisaged subscriber capacities that will be available to alternative operators under RUO during 2009-2011:

Table-4: Number of Additional LLU Switches
Available to Alternative Operators
(Between February 2009-February 2011)

Year	Number of Additional LLU Switches	Rate of Increase in PSTN Subscribers	Rate of Increase in (Active) ADSL Subscribers
2009	114	62.3%	60%
2010	194	32.1%	30.9%
Total (as of February 2011)	357	74.4%	72.35%

(Source: ICTA)

The big question is whether possible achievements projected by RUO will have been realised or will ISPs continue their former business models to take up broadband customers. While there are many parameters have an influence in answering to this question, the low level of the already-set entry wholesale prices prominently affects the overall discussion. This is so because

the entry price level in Turkish broadband retail market (that corresponds to a speed of 1Mbps with a traffic cap of 4GB) has been stabilised since November 2004, and most of the broadband subscribers (near 79% as of February 2009) use this package as it is commonly marketed by ISPs¹²⁹. With the recently set prices for IP-level bitstream, ISPs have been left margins between 41-50% for different packages including the entry level one. In the face of these workable margins most ISPs would continue to stick to their existing models, and refrain from taking risky investments. On the other hand, the regulatory prospect for LL, with the lastly reduced prices and the high rate of increase in the envisaged subscriber capacities gives a predictable way to go on. That is to say the sunk costs attributed for the initial investments and long-term returns from the capital employed are no longer valid for LLU operators, especially for those who have had an entrenched customer base through IP-level bitstream access and reached the critical mass for LLU.

Now, Turkey is at the juncture point as to the prospective steps to be taken with regard to building a sound and long-term national broadband policy. At this juncture, the aspiration of Regulatory Authority (ICTA) and the Competition Authority (CA) to open the existing networks and facilities to third parties is ought to be reconsidered, even to be challenged, considering its possible negative effects against fibre deployments and investments for high-speed broadband (e.g. 50 to 100 Mbps). Considering the long-term benefits to be yielded, the competent authorities should focus on stimulation of the high-speed broadband offers such as FTTx and VDSL2, which are currently marketed on a quite limited basis in Turkey. While some advances in Asymmetric Digital Subscriber Line (ADSL) technology may be able to squeeze 25 Mbps out of our existing copper networks, there is an inherent limit to the capacity of the traditional twisted copper pair that is currently provided by most telephone companies to the home¹³⁰. The clearly-proven benefits attributable to broadband availability¹³¹ and high-speed platforms¹³² in economic terms pose an inevitable need to seek a blueprint throughout FTTx deployments.

¹²⁹ See also Kılıç, 2007, p. 74, stating that “[I]t is obvious that the floor price has been accepted at this level (29 TL/month) as Türk Telekom has made no decreases in the prices in three years but rather increased the speed of the entry level offer.”. Subsequently, 1Mbps (with a traffic cap of 4GB) tariff package has gradually been replaced with “Up to 8Mbps” (with a traffic cap of 4GB) tariff package during the last year.

¹³⁰ Windhausen, 2008, p. 5.

¹³¹ See *supra* note 4.

¹³² The measurable economic effects of investment in broadband infrastructure, particularly FTTx that will provide high data speed and connections, have been put forth within a number of empirical studies. While an earlier one shows that a doubling of fibre-optic cable leads to a more than 10% increase in the level of economic activity in the high-tech knowledge-intensive sectors, a

Across the globe, FTTx investment is the most potential driving force behind the growth of electronic communications markets, where operators are diverting their business plans to high-speed multi-media infrastructure and services. Considering the unavoidable need for future-proof and high-performance multi-service infrastructure, such business plans will inevitably increase within the global arena in the foreseeable future. Despite the downturn that is affecting virtually every economy, the ultra high-speed access market is expected to grow significantly, namely with the global customer base increasing to 140 million by 2014 while FTTH/B technologies will dominate the market, accounting for around 114.4 million subscribers, compared to around 25.6 million customer for VDSL¹³³. These facts demonstrate that investments are going to be much faster and spread out a larger area with the threat of enlarging the gap between developed and developing countries in respect of technology adoption, digital consumption and high-speed broadband. To remedy this picture bigger tasks rely on developing countries which critically face lagging behind the information society projects.

In view of these facts, Turkish policy makers have to adopt a sound and applicable approach for creation of an advanced, ICT-inclusive and knowledge-driven broadband network. To reach this goal, which is articulated as a part of

subsequent study using data from 21 OECD countries over a 20 year period, finds evidence of significant positive causal link between broadband investment and economic growth, whereby an increase of 10% in the broadband penetration rate leads on average to an increase of 2.8% GDP growth (CAMBINI, C. and JIANG, Y., (2009), Broadband investment and regulation: A literature review, *Telecommunications Policy*, Vol. 33, p. 560, citing Greenstein, S., McMaster, S., and Spiller, P. (1995), The effect of incentive regulation on infrastructure modernization: local exchange companies' deployment of digital technology, *Journal of Economics & Management Strategy*, 4(2), p. 187–236, and Röller, L. H., and Waverman, L. (2001), Telecommunications infrastructure and economic development: a simultaneous approach, *American Economic Review*, 91(4), p. 909–923). Results of a more recently done econometric model shows that OECD countries have had an average 37.02% penetration increase for the period 2002-2007 and from this the 0.39% of their annual economic growth can be attributed to broadband infrastructure (almost one-tenth of annual growth) (KOUTROUMPIS, P., (2009), The economic impact of broadband on growth: A simultaneous approach, *Telecommunications Policy*, Vol. 33, p. 479). See also *supra* notes 4 and 5.

¹³³ IDATE News 465, 6 April 2009, <http://www.idate.fr/en/News/>, last visited by 22.03.2010. By the end of 2008, there were 1,661,895 FTTH/B subscribers in the EU-31 and around 11.2 million homes/buildings passed. The number of homes and buildings passed increased significantly (27%) in the second half of 2008, while the number of FTTH/B subscribers rose (25%) at a slightly lower rate during that period (IDATE Press Release, 11 February 2009). In 2009, rate of growth in terms of subscribers and homes/buildings passed in Europe has, respectively, become 19% and 29% between the period of June and December 2009. As of the end of 2009, there were nearly 3.5 million FTTH/B subscribers and more than 25 million homes/buildings passed in EU36 (including Russia) (IDATE Press Release, 24 February 2010).

2013 Vision, a combined set of policy tools and remedies should be in place¹³⁴. While a very wide range of measures could be considered in this regard, i.e. from R&D investments to education matters, below the regulatory and governmental steps, which could be possibly integrated into a national broadband policy, are expounded in light of various country examples, with a more focus on the latter as the former is elaborated above to a certain extent.

First and foremost, infrastructure and service based competitors should be granted an equal basis to compete in the market, which means a favourable approach for investors and LLU/FTTx undertakings as it brings out cost-effective results in the long run. To that end, regulator would rather follow a light-touch regulation for newly emerging services, e.g. FTTx services, and in parallel to this type of de-regulation, should consider to gradually forbear from regulation of entrenched access models. In this regard, first, simple resale via which around 7,000 subscribers are offered broadband services should not be mandated any more. This is persuasive not only from the perspective of promoting infrastructure-based competition but also because of the extensive reductions made in access and transmission costs in recent years. Second, IP-level bitstream access, being the most prominent (broadband access) model for the time being, should be relaxed from price regulation once LLU, which, representing the half-way house between intra-platform competition and facilities-based competition¹³⁵, reaches the level of two third of the whole broadband subscribers across the country¹³⁶. Third, these two steps should be followed by gradual forbearance from regulation of LLU prices, when emerging networks such as FTTx pose a real threat on the market competition, which would take a long timeframe and needs to be verified in concrete terms.

It is also to be noted that the benefits of infrastructure and service based competition strategies evolve in time and compensate the negative aspects of the

¹³⁴ Roll out of broadband infrastructure across the country is laid down as one of the ICT objectives in the 9th Development Plan (State Planning Organisation, 2006, 9th Development Plan (2007-2013), p. 76).

¹³⁵ CADMAN, R., (2008), Inconsistent Regulation, Market Structure and Broadband Adoption in the EU: A Dynamic Model, CCP Working Paper 08-14, p. 11, http://www.uea.ac.uk/polopoly_fs/1.104667!ccp08-14.pdf, last visited by 22.03.2010.

¹³⁶ In EU countries, high growth of unbundled local loop-based products continues every year, and according to the data of 14th Implementation Report, represents 69.3% of all DSL lines used by alternative operators (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Progress Report on the Single European Electronic Communications Market 2008 (14th Report), SEC(2009) 376, Final Report 2008 (COM(2009)140Final) - 24 March 2009, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009DC0140:EN:NOT>, last visited by 22.03.2010, p. 10).

other, i.e. the positive effects of reduced access costs would emerge where service-based competitors exist against those who rely on their infrastructure as well as LLU investments.¹³⁷ Service-based competition could help to keep prices low if introduced as a complement to infrastructure-based competition (providing that regulators keep track and properly align the competitive balance between access models by rendering workable margins between the models).¹³⁸ It could be said that this aspect of service-based competition is not widely and effectively applicable in Turkey, where there is no substantial infrastructure-based competition and the inaction of operators towards next generation broadband infrastructure is remarkable.

While access-related steps and pricing measures have a crucial aspect to promote next generation broadband infrastructure, structural and non-pricing barriers should also be taken into account in order to trigger the potential to boost broadband investments, and to eliminate the obstacles against such investments. Among such obstacles, diversified and incoherent practices with regard to rights of way appear on the agenda as an overriding problem. This is so because a number of public authorities have a capacity to offer third parties their underground/aerial facilities as well as to give consent to operators for digging in their properties, installation of their equipment, deployment of fibre, etc., and their practices vary according to many parameters including the relevant legislation. Like many countries, Turkey is lacking in a one-stop shopping mechanism, and numerous rights of way measures, e.g. imposed by

¹³⁷ However, in presence of limited infrastructure-based competition, the competitive forces attributable to service-based models against FTTx type services fall limited. In close relation to this fact, incumbents who are worried about an inclination towards infrastructure-based competition, would apply more attractive conditions for bitstream access/simple resale in order to prevent such a process (Dikici, 2009, p. 233).

¹³⁸ KITTL, J., LUNDBORG, M. and RUHLE, E., (2006), Infrastructure-Based Versus Service-Based: Competition in Telecommunications, *Communications & Strategies*, No. 4, p. 76-77, <http://mpira.ub.uni-muenchen.de/3571>). Thus, access products like bitstream access and simple resale could mitigate the FTTx and LLU operators, who could act independently and possibly increase their retail prices after reaching a large scale. The dramatic decrease of FTTH prices in Japan is an example directly fitting with this fact. NTT, who controls 79% of all FTTx connections, started deployment in 2000 and have reached a well-advanced level, namely near 30% of all the broadband subscribers in Japan. Interestingly, after a short period following launch FTTH access, NTT drastically reduced its FTTH broadband prices (e.g. from €63 to €33.7) in mid-2001. Behind this course of action was the existing market conditions characterised by severe retail price competition and obligation of NTT to unbundle its fibre platform (KATZ, R. L., (2008), Ultrabroadband Investment Models, *Communications & Strategies*, Special Issue, p. 108).

municipalities, utilities, etc. would easily deter investors from deploying fibre investments¹³⁹.

With regard to rights of way, Electronic Communications Act No. 5809 provides for an obligation, which also gives an important signal in favour of new entrances into the market. The Act envisages rights of way obligation to be applicable for *technically possible, economically proportionate and non-substitutable requests*, providing that any permanent damage is not to be caused, usage of rights over immovable(s) is not to be hindered. This obligation, to which a number of terms and conditions are attached in the Act¹⁴⁰, is conceivable a step forward towards broadband deployments; yet it could not be successfully applied unless some safeguards have been provided. Although the ICTA does not have an obligation to set the rights of way prices, to remove relevant technical and legal impediments and/or to arbitrate between the parties in that sense, it would be facing further difficulties in case this issue has not been handled by itself or government. In this regard, the Authority (or Ministry of Transport) should, at least, undertake the coordination task among the public authorities that have ample capacity, and lead them to sign a memorandum of understanding in regard to provision of rights of way. Even taking a further step and co-ordinating infrastructure digs among providers would also be deemed as one of the important goals of rights of way measures. As a matter of fact, co-ordinating infrastructure digs allows operators to each lay down their own ducts and cables at the same time when the street is open¹⁴¹.

¹³⁹ While mandatory facility sharing presents an opportunity for alternative (infrastructure) operators to use the aerial/underground infrastructure of incumbents, such an opportunity does not extend to usage of other private/public lands. Thus, the difficulties attributed to lack of effective rights of way measures could hardly be solved by alternative means including facility sharing.

¹⁴⁰ Such terms and conditions draw a framework for the rights and obligations of rights of way provider and beneficiary parties, e.g. preservation of the nature, alternative networks and utility infrastructure, etc., compensation of the damages arising out of digging and installation over/under the properties, applicability of mandated rights of way in presence of facility sharing/co-location obligations. However, neither designation of rights of way fee nor the task of Authority in resolving disputes with regard to rights of way is defined in the Act.

¹⁴¹ OECD, 2008, p. 62. Australian carriers are given special land access powers and some immunities from state and territory planning laws as a way to aid in infrastructure development and these same laws also encourage the sharing of passive infrastructure such as poles, ducts and towers (*Ibid*). See also Kulalı and Bilir, 2010, p. 139, stating “It should be noted in respect of prevention of waste of resources that infrastructure operators who intend to invest along the same route could be given a rights of way for a period (to illustrate, 3-4 years) according to the principle that first come first served, providing that each operator are subject to the condition to prepare, in addition to what it needs, a spare capacity for those who would invest in the same route.

Most of the referred steps, which generally rest on the regulator, would also require a governmental intervention to certain degrees. Though such an approach does not necessarily mean the single way forward, it is fair to conclude that without a specified level of governmental support, regulatory arbitrage between available methods and policy making to change the competitive environment via access regulation would hardly yield effective results¹⁴². Depending solely on access and pricing regulations should be questioned as to whether they bring out the expected results of long-term efficiency and consumer welfare as governmental practices that volunteered to financial support or to conduct a deliberate action to stimulate broadband supply in many cases yielded effective and longer-term solutions. Many developed countries demonstrate the benefits from long-term involvement by honest, technologically sophisticated government officials that understand the stakes involved and work conscientiously to establish a transparent, efficient, flexible and positive business environment for the long run.¹⁴³ Governments can enhance ICT development by articulating from the top a broad vision of what ICT can do for a nation and its citizens, while leaving to community champions the flexibility to propose specific, “bottom-up” projects that aggregate the supply of services needed to support the build out of a telecommunications infrastructure¹⁴⁴. Thus, governmental oversight could favourably be integrated with regulatory arbitrage in a good formulation, particularly in developing countries, where operators’ commercial actions fall insufficient to yield long-term results in terms of ICT enhancement, advanced multi-media services, and high-speed broadband platforms. Such a need stems not only from the lack of adequate capital to deploy great investments but also due to the requirement to fill the so-called increasing digital gap between developed countries.

Considering the success stories of the countries with highest broadband penetrations, governmental support clearly emerges as a serious factor in boosting broadband deployments and spreading out broadband connections to the whole country. While a number of tools are seen on the path to enhance broadband deployment, i.e. funding broadband access with grants or low-interest loans, facilitating rights of way, creation of a broadband atlas, establishment of a new task force, etc., an overall approach is inevitably needed in order to reach a workable system within which the highest efficiency gains

¹⁴² Regarding inadequacy of access regulations, with particular emphasis to British Telecom case, see KIRSCH, F., and HIRSCHHAUSEN, C. V., (2008), Regulation of NGN: Structural Separation, Access Regulation, or No Regulation at All?, *Communications & Strategies*, No. 69, 1st quarter, p. 74.

¹⁴³ FRIEDEN, R., (2005), Lessons from broadband development in Canada, Japan, Korea and the United States, *Telecommunications Policy*, Vol. 29, p. 603.

¹⁴⁴ *Ibid*, p. 609.

are targeted. Across the globe, in drawing a roadmap, first the goals to be achieved are set, and the potential as well as actively used tools are elaborated, typically. To illustrate, the ambitious goals of the Federal Government of Germany could be given: i) gaps in broadband penetration are to be eliminated and capable broadband access made available nationwide by the end of 2010, ii) a total of 75 percent of households are to have Internet access with transmission rates at least 50 Mbps by 2014. This level of high-speed broadband access is to be rolled out nationwide as quickly as possible¹⁴⁵. In France, it is planned that by early 2010, every citizen will have access to broadband speeds of at least 512 Kbps at a maximum cost of 35 Euros a month (including the cost of broadband installation). PTS (Swiss regulator) has also built a broadband strategy based on the aim to increase accessibility to an infrastructure with the short-term objective of *broadband for all the households (permanent housing) and businesses* by 2010, specifying that the term ‘broadband’ is used to mean the connections that can be upgraded at access level to transmission rates downstream of at least 2 Mb/s¹⁴⁶. Similarly, UK Government, considering the need to support the market to deliver beyond the commercially attractive areas, to *at least 90% of the UK by 2017*, initiated a legislation process to implement an infrastructure investment programme (a Next Generation Fund) *to ensure virtually every community has access to a broadband connection of at least 2Mbps*¹⁴⁷. Many other countries put forth ambitious goals for broadband penetration, speed and coverage, and put into force blueprint documents to achieve such goals.

In Turkey, Ministry of Transport has published a Strategic Plan¹⁴⁸ for a five-year period, namely between 2009-2013, revealing the targets related to a number of industries including ICT-related ones. The so-called Strategic Plan draws a strategy for ICT-related issues including broadband, and puts forth the following targets: *i) to ensure development of the information and communications industry in a sustainable and effectively competitive manner,*

¹⁴⁵ FEDERAL MINISTRY OF ECONOMICS AND TECHNOLOGY, (2009), Federal Government’s Broadband Strategy, <http://www.bmwi.de/English/Navigation/Service/publications.did=294718.html>, last visited by 22.03.2010, p. 8.

¹⁴⁶ NATIONAL POST AND TELECOM AGENCY, (2007), Proposal for Swedish Broadband Strategy, Report No: PTS-ER-2007:7, http://www.pts.se/upload/Documents/EN/Proposed_broadband_strategy_eng.pdf, last visited by 22.03.2010, p. 22.

¹⁴⁷ Consultation on proposals for a Next Generation Fund: Digital Britain, 2010, p. 5.

¹⁴⁸ MINISTRY OF TRANSPORT, (2009), Ministry of Transport Strategy Plan (2009-2013), http://www.ubak.gov.tr/BLSM_WIYS/UBAK/tr/dokuman_ust_menu/stratejikplan/20090612_170_301_204_1_64.pdf, last visited by 22.03.2010.

ii) to increase the number of broadband Internet subscribers to more than 11 million, to offer broadband Internet services to all the schools with the social responsibility and to eliminate the access difference between high-populated urban cities and the rural areas within the framework of Universal Service Act, *iii*) to encourage R&D studies in information and communications technologies, *iv*) to conduct the transactions for which Ministry of Transport is in charge, with the view to ensure common usage of information and communication technologies on part of citizens, undertakings and all the public entities. While these targets shape the framework of the Ministry's Strategic Plan, there seem no concrete steps to achieve these targets within the said Strategic Plan other than the objective of 'reduction of the taxes at the level of %35 in a proportionate manner'. Neither the strategic priorities laid down in the ICT Strategy Paper (2006-2010)¹⁴⁹ nor the priorities and remedies envisaged (for policy makers and regulators) under the 9th Development Plan (2007-2013)¹⁵⁰ draw a comprehensive roadmap for broadband initiatives supported with financial and administrative mechanisms. One could not see in such documents a pro-active role assigned to the market actors in particular to the state agencies, concrete targets and milestones in terms of broadband speed, quality and coverage or a policy promulgation with regard to creation of country-wide next generation networks and services.

It is undoubtedly clear that designation of a number of objectives without defining the roadmap falls far from building a blueprint for a broadband policy, and is conceivable as an incomplete step no matter it is well-projected. Thus, as many developed countries do, a multi-level, macro and well-designed roadmap has to be put into place by Turkish policy makers. It should be born in mind that without a macro viewpoint encompassing a governmental strategy, FTTx type emerging services would be limited to newly urbanizing metropolitan areas, and do not extend to the rest of the country. This also means a destiny of augmented service-based models which always fall adequate in attracting new technologies and services, e.g. IPTV, interactive multimedia, video-conferencing. In a country which has geographical constraints that could easily drive potential investors to refrain from big investments, changing such a destiny becomes more crucial and highly rests on a comprehensive governmental approach.

¹⁴⁹ State Planning Organisation, Information Society Strategy (2006-2010), 2006, p. 50-53.

¹⁵⁰ See State Planning Organisation, 9th Development Plan (2007-2013), Special Expertise Commission Report, 2006, p. 112-113.

While all the details pertinent to a broadband strategy are hard to be defined in a harmonised manner, mostly applicable policy tools across the globe, which are enumerated in the following three categories, are focused here:

- (i) Government subsidisation for broadband deployment (with the ultimate goal to ensure a fully-fledged next generation network available to all the access seekers) could be an important solution to stimulate broadband growth across the country. This could be ensured either through universal service or a specified funding mechanism, e.g. via allocation of a specific portion of the public budget.
- (ii) Government and competent authorities could encourage establishment of consortiums between the municipalities and the undertakings that would invest in F/O as well as wireless infrastructure. Unfettering the investors, especially the municipalities, from regulatory and legal pressures, e.g. regarding licensing procedures, as well as introduction of tax exemptions or reductions could favourably accompany such course of actions.
- (iii) Opening the utility infrastructure, i.e. gas, electricity, water, railway to the undertakings could be considered as either an alternative or a complementary step.

5.1. Funding Schemes

The first option has many advantageous aspects as it offers a centralised viewpoint that would eliminate future conflicts of interest among the alternative and incumbent operators, and culminate in an efficient use of resources on a large scale. However, as the method is to promulgate a country-wide project it inevitably entails a huge budget and thus requires a Parliament decision, at least decree of the Council of Ministers. The latter would be sufficient in case of using the universal service fund, which was set up to meet the universal service expenditures pursuant to the ‘Act on Provision of Universal Service’¹⁵¹.

Considering that the said Act describes the scope of the ‘universal service’ including *a)* fixed telephony services, *b)* public (pay) telephone services, *c)* printed or electronically offered directory inquiry services, *d)* emergency call services, *e)* *basic Internet services*, *f)* passenger transportation services to places which are accessible solely via marine transportation means and communication services with regard to the security in seas, it could easily be concluded that universal service fund could be favourably used as a leverage to increase broadband penetration. What the questionable aspect of this way is how to establish the link between the universal service and the broadband

¹⁵¹ Official Gazette, Date: 16.06.2005, Number: 5369.

investments. The facts that proposing any revision of the scope of the universal service to the Council of Ministers is left to the Ministry of Transport¹⁵², and that contributions to the universal service fund are collected from several sources at pre-defined levels¹⁵³ facilitates answering this question¹⁵⁴. This legal situation ensures a rather wide discretion as to the scope of the universal service, and would enable transfer of a specified portion gathered under the universal service fund to the objective of broadband investments.

What the supplementary fact supporting this policy tool is the practices which the government has pursued so far. As a matter of fact, Ministry of Education made a decision to spread internet usage in the schools whole over the country, and made a tender for that purpose. The Ministry, having worked mainly with Türk Telekom and TNet, succeeded to equip 21,000 schools (at the primary and secondary level) with computer facilities and to provide 11,000 of them with broadband Internet, by using wireless and satellite connections in places where alternative technologies do not exist. Considering the fact that a specified portion of the universal service fund has been allocated to financing

¹⁵² Invoking the competence given by the Article 5 of the Act No. 5369, Council of Ministers included the two following elements into the scope of universal service: *i*) services oriented to spread information technologies, including computer literacy, to help the development of the information society (in February 2006), *ii*) services for the provision of the digital broadcasting by the use of various broadcast media and technology via digital terrestrial transmitters to cover all settlements countrywide (in April 2006).

¹⁵³ Contributions to the universal service fund are collected from several sources:

- a) 2% of the authorisation fees collected by the Telecommunications Authority;
- b) 1% of net sales revenues of all operators except for GSM operators;
- c) 10% of payments by GSM operators to the Treasury;
- d) 20% of administrative fines collected by the Information Technologies and Communications Authority;
- e) 20% of what remains in the budget of the Information Technologies and Communications Authority budget after all expenditures are deducted.

These percentages can be increased by up to 20% by the Council of Ministers according to the Law No. 5369. These revenues are collected in the public budget and are allocated to the budget of the Ministry of Transport, although no payments have been made so far. As universal service legislation has not been applied in practice, universal service is still provided by Türk Telekom in line with the requirements set out in its concession agreement (license), (EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT, (2008), Comparative assessment of the Telecommunications Sector in the Transition Economies (under Legal Transition Programme: Telecommunications Regulatory Development), p. 94, <http://www.ebrd.com/country/sector/law/telecoms/assess/index.htm>, last visited by 22.03.2010). On the other hand, the universal service fund consist of specified payments collected from several sources, it could be speculated that provision of the legally-defined universal services and/or allocation of the revenues to universal service providers is conducted without respect to the universal service net costs.

¹⁵⁴ For a similar view towards supporting broadband investments through universal service fund, see TOBB, Türkiye Telekomünikasyon Meclisi, (2009), Türkiye Telekomünikasyon Sektör Raporu, <http://www.tobb.org.tr/yayinlar/yayinlar.php>, last visited by 22.03.2010, p. 10.

this project, a similar attempt would be seriously considered in respect of a country-wide high-speed broadband project. Given the fact that “services oriented to spread information technologies” are included into the scope of the universal service in February 2006¹⁵⁵, broadband Internet, which is widely seen a part of information society development, is easily conceivable within the scope of universal service¹⁵⁶.

Reinforcing the link between the universal service and Internet services, which is already established by the Act itself, would successfully serve not only to increase of competitive broadband services but also the aim of eliminating the so-called ‘digital divide’¹⁵⁷. Besides universal service fund, a separately designed fund, e.g. UK NGA Fund, promulgated EU funds for rural areas, or tendering mechanisms e.g. such in Ireland where management and operation of networks have been transferred (after a competitive tendering process) to E-Net on the basis of an exclusive 15 year period, which at the end will be reverted to local authorities, could be considered as alternative ways to boost broadband investments. These ways, entailing a centralised way for deploying broadband infrastructure, have a difference from the usage of universal service fund given the fact the former two require a specific initiative led by the Parliament¹⁵⁸. Creation and implementation of a governmental subsidy for broadband deployments all over the country, either under the universal service fund or via another funding mechanism, means a quite elaborate, extensive and forward-looking project. Notwithstanding, this is the most effective method to reach the ICT-centric objectives, for which Far-East Asian Countries took deliberate action and followed ambitious projects.

For instance, Korea has a history of four consecutive national information infrastructure projects, the National Basic Information System (1987-1991), the Korean Information Infrastructure (1993-2000), IT839

¹⁵⁵ See *supra* note 151.

¹⁵⁶ Remarkably, within the Special Expertise Commission Report prepared for the 9th Development Plan (2007-2013), the suggestion that broadband Internet access should be deemed as a universal service is laid down one of the articulated priorities (See State Planning Organisation, 9th Development Plan (2007-2013), Special Expertise Commission Report, 2006, p. 112).

¹⁵⁷ See also Ayhan Tözer and M. Bilal Ünver, (2008), *Universal Service, the regulation and application of this concept in Turkey and comparison with other countries*, paper presented in the 17th Biennial Conference of the International Telecommunications Society on June 28th, 2008, in Montréal/Canada, p. 18.

¹⁵⁸ Among the possible governmental methods to spread out the high-speed broadband connections to all over the country, Ministry’s opening tender would be questioned for its possible anti-competitive effects as such a way could easily allow privileges being granted in relevant regions of the country, giving way possible foreclosures from the geographical market(s).

(2004-2006), and u-IT839 (starting 2006)¹⁵⁹. All these projects, which have been refashioned in time and ultimately extended to creation of an “ubiquitous” network society, were carried out in close partnership between public and private sectors. The Korean Information Infrastructure-Government Project (KII-G) is an example of the government’s course of action. The initial funding 1 billion USD was provided by the government that also became the main tenant on the network to create additional demand.¹⁶⁰ Furthermore, about 10 million Koreans were trained in the use of IT¹⁶¹. Like South Korea, Japan is a country with a well-advanced level of FTTx connections and high-speed broadband. For over 25 years there is an increasing pace of FTTx usage via e-Japan scheme and commercial initiatives. At the end of 2007 fibre represented 36% of all broadband connections in Japan, whereby the service is available to 84% of the population and projected to reach 90% by 2010¹⁶². Not a single cause, but rather that a combination of some government-subsidized loans, facilities competition and access based competition created both supply and demand for very high speed Internet access in Japan, and that this cycle led to further investments in both plants¹⁶³. Likewise, in the US, where service-based competition and facilities-based competition co-exist, a specific governmental subsidy scheme has been created with a fund of 7.2 billion USD, in order to expand broadband access to unserved and underserved communities across the U.S., increase jobs, spur investments in technology and infrastructure, and provide long-term economic benefits¹⁶⁴.

5.2. Collaboration with Municipalities

Establishment of consortiums between the municipalities and the undertakings that aim to invest in high-speed broadband infrastructure would also be enforceable, considering a great many comparable examples in the Western countries. For instance, in Sweden by the end of 2004, only 10 municipalities out of 283 did not have infrastructure in place to support broadband services, and some have developed open access fibre networks.¹⁶⁵ After Sweden liberalised its telecommunications industry in 1993, the city of Stockholm created a municipality owned company called Stokab in 1994 to provide dark-

¹⁵⁹ Kirsch and Hirschhausen, 2008, p. 77

¹⁶⁰ Kirsch and Hirschhausen, 2008, p. 77

¹⁶¹ Kirsch and Hirschhausen, 2008, p. 77. See also PAPACHARISSI, Z. and ZAKS, A., (2006), Is broadband the future? An analysis of broadband technology potential and diffusion, *Telecommunications Policy*, Vol. 30, p. 70.

¹⁶² Katz, 2008, p. 108.

¹⁶³ The Berkman Center for Internet & Society, Harvard University, Final Report, 2010, p. 140-141.

¹⁶⁴ See <http://broadbandusa.sc.gov.usda.gov/>, last visited by 22.03.2010. See also *supra* note 30.

¹⁶⁵ Windhausen, 2008, p. 50.

fibre infrastructure capacity to end users and operators. Stokab has laid some 500,000 km of fibre throughout Stockholm, benefiting from the city's water, sewer, and electricity ducts and tunnels and a relationship with city officials, and now leases them to banks, insurance companies, retailers, media companies, universities, etc¹⁶⁶.

Equally, Denmark has successful examples of similar local challengers frequently organised as a non-profit community network provider. DjurslandS.net, having implemented a wireless infrastructure in a rural area of Denmark via an EU based financial scheme, reveals a prominent case-study, representing a non-profit rural community network established in response to unmet demand for broadband connectivity in regions outside the reach of traditional technologies.¹⁶⁷ The company, which relies on local voluntary work and bases its operation on standardised equipment (outdoor mountable amplifying receivers, antennas, etc.), open source software where available, succeeded to have the largest non-commercial wireless network in EU at the end of 2004.¹⁶⁸ Getting indirect support from the municipality through sharing of its 10 employees and housing (e.g. the offices located in basement of the local gymnasium), DjurslandS.net is not based on hiring professionals for all tasks but based on using available resources and build up competences in the community.¹⁶⁹

Similarly in the US are there many examples of local governments that are engaged in building municipal fibre networks. According to the data gathered from an in-depth survey of three fibre-to-the-home communities, significant evidence is found so as to support municipal investments in FTTH. As a result of such local initiatives, remarkable developments are witnessed, namely 3.4 million USD increase in total sales, 4 million USD decrease in total costs, and an average increase of 11.9% in employment because of FTTH over a 12 month period.¹⁷⁰ France has also witnessed equally successful local challengers in field of broadband investments for which municipalities have undertaken operation of 53 projects out of 86 that extend to two third of the total coverage of the country¹⁷¹. While frequently direct subsidies are granted to

¹⁶⁶ Windhausen, 2008, p. 50.

¹⁶⁷ TADAYONI, R. and MATTHIAS, S. H., (2007), Development of alternative broadband infrastructures - Case studies from Denmark, *Telematics and Infomatics*, Vol. 24, p. 342-343.

¹⁶⁸ *Ibid.*

¹⁶⁹ *Ibid.*

¹⁷⁰ Windhausen, 2008, p. 50.

¹⁷¹ See also Kulalı and Bilir, 2010, p. 133. What the critical point to be remarked here is that municipalities in France carry out the projects in collaboration with operators, but not by excluding them (*Ibid.*). In fact, making the infrastructure constructed by municipalities available to ISPs is crucial for open competition and creation of fair playing field.

local authorities from the governments, e.g. Sweden¹⁷², in some other countries, e.g. Germany¹⁷³ general funding schemes are invoked in order to finance the municipal deployments.

As to the municipalities in Turkey a number of decisive actions are required to make them construct high-speed broadband infrastructure individually or in collaboration with operators. First and foremost, licensing procedures pose some difficulties on these undertakings in the guise of pre-conditions to be met to be eligible to construct any electronic communications infrastructure. Not only to eliminate such barrier-type conditions but also to boost efficient use of resources, clear legal provisions are needed in order for collaborations between municipalities and operators to take place. By this way, possible collusions between the parties, and inefficient use of resources would have been pre-empted. Exempting joint ventures, which have been established exclusively to roll out broadband infrastructure in a region, from taxes or providing serious tax reductions with them facilitates such projects. Even in the event that such activities fall under the scope of current statutory provisions, a specific Act and/or a government decree would give clear signals and encourage undertakings towards such collaborations. Not only such collaborations but also creating coordinative mechanisms among relevant agencies, policymakers and industrial stakeholders such as consultative committees, hearings, seminars, forums, and research centres is also crucial to bring out the synergy and the potential benefits towards broadband deployments across the country¹⁷⁴. Last but not least, such type of collaborative actions should first be put in place under pilot programmes.

5.3. Utility Resources

The third course of action, which many governments pursues and could be deemed the least onerous method to boost broadband deployments for Turkey, is the opening of the utility infrastructure, i.e. gas, electricity, water, highways. There are parallel utility networks which pass different routes across the countries, and such networks usually contain enough capacity for alternative

¹⁷² Papacharissi and Zaks, 2006, p. 71.

¹⁷³ Federal Government's Broadband Strategy, 2009, p. 15. In the Broadband Strategy of Germany, it is stressed pursuant to the existing legislation that in areas assisted by the GRW ("Joint Task or the Improvement of Regional Economic Structures"), all broadband investments made by industry can be financed with the GRW funds under the existing provisions (*Ibid*).

¹⁷⁴ For similar views regarding the need to conduct a coordination between the relevant agencies, e.g. municipalities, public institutions and utilities, with the view to encourage broadband investments, see ACAR, S., (2009), *Yeni Nesil Sabit Erişim Şebekelerine (FTTx) Geçiş Sürecinde Düzenleyici Yaklaşımlar: Uluslararası Örnekler ve Türkiye İçin Öneriler*, Uzmanlık Tezi, Bilgi Teknolojileri ve İletişim Kurumu, p. 171.

objectives such as fibre deployments. Usage of such networks ensures efficient use of existing resources, and Turkey should consider this opportunity as an important -if not the single- means to spread the high-speed broadband connections to the whole country¹⁷⁵. Not opening a tendering with the view to enable usage of the utility network to one operator, but opening the relevant infrastructure to all the access seekers should be pursued in order to maximise the benefit. Neither big expenditures nor heavy-handed mandatory measures are required in Turkey to realise such a strategy. In light of the abovementioned suggestions in respect of rights of way and the evolving facility sharing opportunities (which individually could not meet increasing needs of operators), usage of existing infrastructure ought to be considered seriously and put into implementation as soon as possible¹⁷⁶.

There are many ISPs taking the advantage of utility infrastructures such as power, gas and transport lines in European countries. In particular the number of carriers using the power lines in EU is appealing¹⁷⁷. Denmark and Norway is at the front line in power line broadband, respectively having 285,000 and 170,000 homes/buildings passed as of December 2008¹⁷⁸. According to a report published by Danish Competition Authority, power companies are planning to extend their networks to 1.2 million households by 2016, and this plan will result in 50% FTTH availability by 2016.¹⁷⁹ For instance, NESA, being one of the PBL suppliers, provides an operator independent network, through which different service providers can access households.¹⁸⁰ The deployment strategy of the company is to lay down empty micro duct tubes with power cables, for subsequent blowing of fibres.¹⁸¹ It seems that the dynamics hidden behind such

¹⁷⁵ Turkey, in late 2007, has faced such an opportunity with regard to opening of the electricity infrastructure to telecom operators, which has not been realised. The tendering was annulled on the ground that there was lack of competition for tendering because just one operator has participated to the tendering, and anyone could not have achieved the privilege to use the said infrastructure. In December 2009, this time, the fibre optic infrastructure within the gas and oil transmission grids have been auctioned to be rented, and an infrastructure operator, namely Superonline has won the tender, subject to the approval of CA. (See *supra* note 128).

¹⁷⁶ For the similar views regarding the importance of and the need to use public utility infrastructures, e.g. railway, electricity, gas see Kulalı and Bilir, 2010, p. 140.

¹⁷⁷ As in previous years, municipalities and power companies are still very involved in FTTH/B deployments, accounting for 58.5% of the projects. Their share nevertheless decreased in the second half of 2008, as alternative operators began to make strides (IDATE Press Release, 2009, *supra* note 133).

¹⁷⁸ IDATE Press Release, 11 February 2009, *supra* note 133.

¹⁷⁹ Tadayoni and Matthías, 2007, p. 344.

¹⁸⁰ Tadayoni and Matthías, 2007, p. 344.

¹⁸¹ Tadayoni and Matthías, 2007, p. 343. To build the FTTH network, NESA contracted IBM Denmark as system integrator for the Project using a technical solution from Cisco and PacketFront. The network is based on a MPLS backbone network from Cisco, connecting islands

projects are their flexible organisational and functional structures relying on the principle that retail service provision is to be outside the realm of PBL operators.

Under the light of many experiences, roll-out of broadband services over power lines appears as one of the common paths followed by many countries alike US. To that end, FCC has made a number of changes to Part 15 of its Rules to accommodate and promote this new technology in 2004 and 2006. Through the latter amendment, FCC also determined that broadband over power-enabled Internet access (PBL) services are information services, thereby placing PBL operators on the same regulatory footing as cable, wireline, and wireless carriers providing Internet access services¹⁸². It is clear that, utility infrastructure with particular emphasis to power lines (owing to its coverage and closeness to end-users) are paid attention across the globe, representing a complementary means to boost country-wide broadband deployments. Hence, such opportunities enable new entrants to carry out country-wide services without the need to incur the capital expenditure initially needed to build individual networks¹⁸³, relying on the so-called ‘stepping-stone theory’¹⁸⁴. In view of above explanations, government should deal with this topic in intrinsic and detailed manner, by first mapping the existing utility infrastructure and pursuing the policy of minimising the required procedures.

Turkey would harmonise abovementioned measures within a tool-box, and draw a blueprint for itself, namely for its prospect to take up broadband and multi-platform ICT services in a timely and effective manner. Handling broadband issues in a comprehensive and pro-active manner, i.e. by involving governmental support as well as public and private collaboration is inevitable for building a long-term ICT strategy. From this point of view, Ministry of Transport’s Plan and the prospective Development Plans should be

of up to 24 homes with an active switch in a curb using a star topology. Inside the homes, NESA installs customer premises equipment that terminates the fibre (*Ibid*).

¹⁸² LEE, K. and PRIME, J., (2009), US Telecommunications Law, in Walden Ian (eds.), *Telecommunications Law and Regulation*, 3rd Edition, Oxford University Press, New York, p. 264.

¹⁸³ For a similar view elaborating the examples of consortiums created by electricity and railway companies, e.g. in Poland, Czech Republic in order to offer telecommunications services via utility Networks owned by themselves, see ARIÖZ, A., (2005), *Telekomünikasyon Sektöründe Serbestleşme Süreci*, Uzmanlık Tezi, Rekabet Kurumu, Ankara, <http://www.rekabet.gov.tr/dosyalar/tezler/tez69.pdf>, last visited by 22.03.2010, p. 76-77.

¹⁸⁴ GENTZOGLANIS, A. and ARAVANTINOS, E., (2008), Forecast Models of Broadband Diffusion and Other Information Technologies, *Communications & Strategies*, p. 82, stating that “The Access to the network (service-based competition) serves as a “stepping stone” before entrants build their own networks and move to facility-based competition (the so-called “stepping-stone” theory)”.

supplemented with elaborated objectives and measures inviting all the broadband actors, e.g. the research organisations, universities, the government, regulator, municipalities, ISPs, etc to collaborate with each other and take serious actions. Given the position of entrenched models and the situation of LLU at the two far ends, the newly launched high-speed broadband services and LLU roll-out needs to be encouraged together and reinforced in liaison with the referred governmental projects. In addition to these steps, the intended privatisation of state-owned cable operator (Türksat) should be given priority and prospective investments on cable network ought to be encouraged. As well, not only cable but also alternative technologies should be licensed as soon as possible. Accelerated launch of wireless broadband access and more advanced 3G services spread out all the country simultaneously with continuous LLU roll-out would clearly serve to the aim of a long-term policy approach which.

6. Conclusion

While it is widely affirmed that broadband is so crucial to have a knowledge-based and consumer-driven economy, elaboration of the measures and policy tools attributed to having a high-speed, innovative and multi-service broadband platform does not equally and effectively attract so many participants with new ideas, suggestions and analytical approaches. However lack of elaborated remedies, success factors or key points on the path to have such an advanced next generation broadband infrastructure is a clear deficiency for a country that is facing the threat of digital gap and lagging behind the global information society. Acknowledging the crucial role of ICTs for economic growth in all sectors, social and cultural development, and innovation, Turkey has yet to discuss on a wide scale the stake of broadband within the context of economic growth, global competitiveness and ICT strategies, and evaluate the gap between its broadband-related objectives, e.g. laid down in 2013 Vision of 9th Development Plan and the current situation which it faces. Finally, the ways and measures to fill the so-called gap need to be widely discussed across the country. That is to say, Turkey, by considering the OECD statistics, its position in terms of broadband values such as penetration, speed and coverage, should take a serious action to re-organise its potential resources, workforce and financial powers to reach not only its own ICT objectives but also the globally and EU-wide articulated objectives. Before advancing such a roadmap, the experiences before and after the liberalisation as well as the main drawbacks that continue to exist and threaten Turkey's prospect in broadband need to be further examined.

Turkish broadband market is an under-penetrated and immature market, having been impaired with the belated liberalisation, high market concentration

and predominance of DSL network whose performance is comparably limited. Long lasting quasi-monopoly structure of the market -though incumbent's share has retreated to 85%¹⁸⁵- has thus far led the market conditions, depending on a number of parameters. Tracing back to the launch of broadband services, it could be argued that the unsuccessfully passed years in terms of competition is somehow related of lack of a pro-active stance. That is to say, regulatory steps have fallen pre-emptive rather than prescribing a roadmap for development of broadband services. 21 cities over 81 having the ability to access cable services supports this fact, namely the fact that cable internet has been overlooked over time although the first broadband offers have taken place over cable platform. Not only this fact but also DSL competitors even acting as resellers having emerged in 2004 after a half million customers have been subscribers of the incumbent proves a lack of long-term vision at the time¹⁸⁶. This could be explained by the fact that the regulatory authority has put into force its secondary legislation, having not been actively engaged with the implementing measures to refashion the marketplace within the initial two years of its performance. Another parameter which had the effect to retard broadband competition is the fact that government has seen broadband coverage as a part of its policy to ensure availability of Internet across the country rather than beholding the matter on a regulatory basis.

On the other hand, both the Regulatory Authority (ICTA, formerly TA) and Competition Authority (CA) have caved into demands of the industry in an increasing pace, and took steps to create an environment where alternative ISPs exist actively. To that end, TA has elaborated on the margins to be left to ISPs that wish to compete against the incumbent by either as a reseller or by means of bitstream access, e.g. using the Türk Telekom's exchange units and handing over the traffic at specific locations. On the other hand, CA has taken a number of prohibitive (ex post) measures, by penalising Türk Telekom for its predatory pricing, i.e. determining the prices applied to its users (under the name of TTNNet) below those of wholesale services; and margin squeeze, e.g. between the retail broadband prices and the transactional costs. By and large, both ICTA's measures and CA's decisions have fallen just contributing to a level playing field rather than creating a sustainable marketplace on the basis of a long-term, self-sustaining, inter technology and platform model.

¹⁸⁵ 85% refers to the ratio of the broadband (DSL) subscribers of Türk Telekom's subsidiary (TTNet) to the total number of broadband subscribers, independent of technology and platform.

¹⁸⁶ In order to deter from a similar situation from happening in Netherlands, the remedy of preventing the incumbent from offering broadband services until making resale and/or bitstream access applicable was already implemented (See VAN GORP. A. F., MAITLAND, C. F., and HANEKOP, H., (2006), *The broadband Internet access market: The changing role of ISPs, Telecommunications Policy*, Vol. 30, p.110).

After a period of two years following liberalisation, during which broadband competition hinged on simple resale, Regulatory Authority intensified on implementing measures to ensure a wider manoeuvrability for ISPs. Obligation of IP-level bitstream access and local loop unbundling were followed by the margins for bitstream access being widened, reduction of LLU prices (after the last reduction in June 2009 full and shared access prices respectively dropped down to €7.07 and €2.66, representing cheaper rates than the EU average), and introduction of ATM-level bitstream access during the last three year, namely since November 2006. Furthermore, co-location prices being cut by 71% (between November 2006-October 2008), alleviated (non-pricing) conditions for both bitstream access and LLU, e.g. adoption of a schedule for opening LLU switches in an increasing pace are the other developments worth being noted in this period. The most spectacular step taken by ICTA is its decision dated February 12, 2009, to mandate third party access to Türk Telekom's underground/aerial facilities, e.g. ducts, manholes, etc.¹⁸⁷ Given the fact that LLU roll-out functions as the half-way house between the intra-platform competition and facilities-based competition¹⁸⁸, it is arguable that Turkey has taken determined steps, via efforts of ICTA, to pass the half of the long journey that is destined to individually-created broadband networks of myriad operators.

It is worthy of attention that ICTA, before the prospective problems being accumulated, has introduced mandatory facility sharing. This initiative, that is deserved to be deemed a pro-active approach, would yield fruitful solutions for both service-based and facilities-based competition. Another pro-active step, which was taken by CA, is the naked ADSL decision dated February 18, 2009, that ordered Türk Telekom to prepare a naked ADSL tariff to be submitted to ICTA. This decision, which has a nature rather facilitating service-based competition, would eventually serve to market penetration of ISPs and broadband take up, and definitely contributes to a long-term projection of targeting an effectively competitive marketplace.

On the other hand, in order to have a longer term vision promising a next generation broadband infrastructure, further steps should be focused on creation of market players relying on their respective networks, and towards

¹⁸⁷ With the said decision have the access seekers become able to apply Türk Telekom for facility sharing at the regulated prices. By enabling access to Türk Telekom's ducts and manholes (including access to the inner areas of the incumbent exchanges), alternative operators intending to deploy fibre would have the opportunity to fill the gaps between their switching centres and incumbent exchanges via their own cables, widen their transmission networks, and compete by means of their own infrastructure.

¹⁸⁸ Cadman, 2008, p. 11.

creation of a country-wide, innovative and high-speed broadband platform not only for filling the digital gap between rural and urban areas but also for the global competitiveness. That is to say, Turkey, by regarding the next generation broadband networks as the digital highways driving its economic prosperity, should not be content with the steps taken already by ICTA and CA, and should turn its face to a self-sustaining, multi-service, country-wide platform. Preferably in liaison with a highly-developed cable platform, a next generation infrastructure would undoubtedly serve to many objectives echoed in Turkey's ICT strategies, i.e. affordable broadband connectivity across the country, a level playing field for competing technologies, sustainable competition whereby market forces can drive continued innovation, full participation of all citizens in Internet-based higher education, workforce development, telemedicine. To achieve these objectives, government should deem itself as an active actor to be involved in broadband stimulation projects, with the consciousness to bring out synergy out of combination between public resources and market forces. Otherwise, broadband and ICT development would not be outside the current worldwide recession and the global crisis that have been threatening all the industries, and a longer period is required to see the hailed broadband figures on the basis of market forces.

As executives of almost every successful government initiative, e.g. South Korea, Japan and Canada began by announcing a broadband plan, setting specific broadband goals, and creating a new organisation focused on implementation, Turkey should do the same before taking action. It should be borne in mind that while the details of a strategic broadband plan often differ among countries, the common 'success factor' of the exemplified three countries is the fact that they each put together a broadband plan with support from the highest levels of the government¹⁸⁹. At the macro-level, these countries (South Korea, Japan and Canada) enacted laws that created incentives for risk taking and innovation and penalised litigation and strategies to delay making necessary investment in capital-intensive projects¹⁹⁰. At the micro-level these countries linked public funding with private initiatives that aggregated demand, generated matching funds and justified the installation of ICT even in geographically unattractive locales¹⁹¹. Crucially, the synergy required to boost broadband deployment promising a self-sustaining prospect, under the light of such experiences, relies not simply on the recurring subsidies and the extensive funding mechanisms but also on the flexibility to be left to market players for

¹⁸⁹ Windhausen, 2008, p. 52.

¹⁹⁰ Frieden, 2005, p. 610.

¹⁹¹ Frieden, 2005, p. 610.

their innovative actions and collaborations with other network/service providers, public/private organisations, e.g. municipalities, universities, utilities, etc.

From this juncture point of view, a concrete and multi-level government initiative is inevitably needed in order to stimulate broadband investments that extend to inter-platform competition, information society goals and ICT strategies. Not only well-designed government subsidies but also coordination between government, regulator and operators is required to bring out the potential to realise such achievements. Similarly, active coordination with municipalities and utilities to be led by the government and/or regulator even via statutory rules would facilitate the combination of public and private forces. Via usage of public utilities' ample capacities, breakthrough results could be achieved for broadband purposes. This issue is a compelling step for the prospect of Turkish broadband market particularly in the short and mid term, when capitals of service providers generally fall inadequate for extensive infrastructure investments.

Eventually, in the context of a promising national plan for Turkey, it is needed that government should handle the issues by bringing the relevant parties together, providing funding for the entities to prepare and realise business plans that entail the infrastructure deployments, taking initiative for resolving the legal barriers (especially for municipalities) as well as financial bottlenecks even by putting new legislation into force and leading the required collaborative actions. In addition to such comprehensive measures, the government should also tackle the inherent problems particularised in other technologies than DSL, i.e. the intended privatisation of state-owned cable operator (Türksat), authorisation of broadband wireless access services, e.g. WIMAX. Along with a top-level governmental policy the pursuit of a long-standing regulatory attitude is also inevitable in the sense that harmonisation of already commenced service-based competition with the investment-based macro policies is critical to create a secure and well-functioning marketplace. Last but not least, Turkey should seek implementation of a broadband blueprint at all levels via public consultations and intensified discussions, and behold the issue as country-wide priority for ICT development.

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