

GSR14 discussion paper

Using Regulatory Impact Analysis to Improve Decision Making in the ICT Sector

Work in progress, for discussion purposes

Comments are welcome!

Please send your comments on this paper at: gsr@itu.int by 20 June 2014.



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ABSTRACT

Regulatory Impact Analysis (RIA) is defined as a systematic, structured, evidence-based analysis of the prospective impacts of a proposed policy measure against possible alternatives. First launched in the US in 1981, it has been heavily promoted by international organizations such as the OECD and the World Bank in the past three decades, and has seen successful implementation in a number of developed and also developing economies. The adoption and implementation of RIA can promote the efficiency, transparency and accountability of government action. However, implementing RIA is also challenging from a procedural and methodological viewpoint, and many countries have failed to date in their attempt to successfully mainstream this procedure into their policy cycle. This discussion paper takes stock of current RIA developments and discusses potential opportunities and challenges of the implementation of RIA in the Information and Communications Technology (ICT) sector. Several examples of application of RIA in the ICT sector are illustrated, and a check-list for regulators is presented at the end of the paper, with the aim to providing advice to ICT regulators on how to successfully use the RIA tool in their daily regulatory decisions.

USING REGULATORY IMPACT ANALYSIS TO IMPROVE DECISION-MAKING IN THE ICT SECTOR

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This discussion paper examines how Regulatory Impact Assessments (RIA) can make a difference in shaping sound policy and decision-making processes and regulation in the ICT sector. RIA is increasingly used as a policy tool to estimate and measure the effects of proposed or existing regulations by enabling a structured definition of the policy problem and a detailed comparison of available regulatory options. The use of RIA also marks a trend towards a more empirically-based and analytic approach to regulating the sector. It is important therefore to inform regulators on how to handle related issues in order to make the best use of tools such as RIA, and thus increase confidence in regulatory decision-making.

The discussion paper is structured as follows. Section 1 below explains what is RIA, which countries have been able to implement it successfully to date and what are the benefits associated with the use of this tool. Section 2 defines the main opportunities of using RIA within the regulatory process, and discusses links between RIA and other better regulation tools such as stakeholder consultation, monitoring and evaluation of legislation. The section also contains a reflection on the main procedural and methodological challenges that must be overcome in the implementation of RIA. Section 3 discusses the use of RIA in the ICT sector and provides some examples such as RIAs used in spectrum policy, market liberalization and roaming. Section 4 presents a regulatory checklist that can assist policymakers in the successful introduction of RIA in their own legal systems, and by advocating the use of cross-disciplinary approaches and multi-varied analysis techniques to ensure the relevance and optimize the validity of the outcomes of RIA. Section 5 concludes with a list of main findings.

1 Understanding RIA: from its origins to current practice

1.1 What is RIA and why it matters

RIA is defined at the OECD level as “a systemic approach to critically assessing the positive and negative effects of proposed and existing regulations and non-regulatory alternatives”¹. Such a general definition is needed, since what is defined as RIA – or some of its variants, such as impact assessment (IA) in the UK or the EU, Regulatory Impact Statement (RIS) in Australia, etc. – encompasses a wide range of methods, procedures and governance arrangements, which can be so different that an authoritative academic has defined a comparative exercise as equivalent to comparing “apples with pears”².

Despite existing differences in the purpose, scope and methods of RIA systems around the world, RIA documents tend to follow a similar structure. The key steps of an *ex ante* RIA are the following:

¹ <http://www.oecd.org/regreform/regulatory-policy/ria.htm>

² See Radaelli, C.M. (2009), Desperately seeking regulatory impact assessments: Diary of a reflective researcher, *Evaluation*, 15(1), 31–48.

- Phase 1. Problem definition.** This phase normally entails the identification of the problem. Administrations wishing to propose a new regulation are asked to identify and describe in detail the problem and its drivers. Policy problems are normally classified in two different groups: **market failures**, including informational asymmetries, barriers to market entry, monopoly power, transaction costs and many other market imperfections that lead to inefficient outcomes; and **regulatory failures**, which include all cases in which an existing set of rules is not achieving desirable outcomes, and as such warrants an update or a repeal. Another case in which a policy problem can be identified occurs whenever the proposing administration is confronting **new policy targets or objectives**, and this requires new regulatory intervention: for example, if the government has set new goals in terms of broadband penetration by 2020, then – even in the absence of a market or regulatory failure – intervention might be needed in order to ensure that the new target is met. Similarly, when RIA is applied to secondary legislation, justification of policy action might be rooted in the fact that the Parliament has adopted a new piece of primary legislation, which requires implementation acts.
- Phase 2. Identification of alternative regulatory options.** In this phase, the need for intervention has to be translated into concrete policy options. Often, available guidelines at international and national level recommend that alternatives to “heavy-handed” regulation, such as light-touch regulation, regulation through information, principles-based regulation, and alternative forms of intervention such as self- and co-regulation are duly taken into account, in order to ensure that the remedy chosen is not disproportionate to the problem at hand.
- Phase 3. Data collection.** This is a crucial phase, which may entail (besides desk research) a variety of empirical methods, from telephone and face-to-face interviews to the distribution of questionnaires, organization of online surveys and consultations, cooperation between regulatory authorities (e.g. ministries, custom authorities, police, etc.), focus groups, Delphi methods, stopwatch methods (especially in administrative burdens measurement), etc.³ The amount of data needed and the method used to collect it vary from case to case, and should not be disproportionate to the RIA: data and information available are normally intended as functional to the accuracy of the assessment phase that follows. When data is missing, economic modeling is also possible, especially through behavioral models such as those used in the law and economics literature⁴; and through econometric modeling.

³ The Delphi method is a structured communication technique, originally developed as a systematic, interactive forecasting method which relies on a panel of experts. The experts answer questionnaires in two or more rounds. After each round, a facilitator provides an anonymous summary of the experts’ forecasts from the previous round as well as the reasons they provided for their judgments. Thus, experts are encouraged to revise their earlier answers in light of the replies of other members of their panel. It is believed that during this process the range of the answers will decrease and the group will converge towards the “correct” answer. Finally, the process is stopped after a pre-defined stop criterion (e.g. number of rounds, achievement of consensus, stability of results) and the mean or median scores of the final rounds determine the results. A stopwatch method entails the simulation of a given activity aimed at measuring the time needed for each of the activity’s phases.

⁴ An example is found in the Impact Study “Making private antitrust damages actions more effective in the EU”, coordinated by Andrea Renda at CEPS, where the impact of fee-shifting rules has been

- Phase 4. Assessment of alternative options.** This is a core phase of the RIA, and can be carried out through different techniques – the most common being cost-effectiveness analysis (CEA), cost-benefit analysis (CBA), and risk analysis. Options scrutinized always have to include the “zero option”, sometimes referred to as “baseline” or “no policy change” scenario, which should not be confused with the “status quo” scenario, since it captures the evolution of the policy problem absent new regulatory intervention⁵. Depending on the available data and the depth of the RIA exercise, the assessment can be qualitative or quantitative, or a mix of the two.
- Phase 5. Identification of the preferred policy option.** Once the available options have been carefully scrutinized, the comparison leads to the identification of the most preferred option. This is not necessarily the options that should be undertaken, as RIA *per se* is only a support to, not a replacement of, the policymaker’s role in selecting the most appropriate action. International guidance documents often recommend that the preferred option is subject to a more in-depth assessment, mostly aimed at quantifying the prospective impacts.
- Phase 6. Provisions for monitoring and evaluation.** As increasingly required in national RIA systems, the RIA document should also specify the ways in which the impact of the selected policy action can be monitored overtime, and a clear and efficient time horizon for revision of the action in the future. In addition, whenever indicators can be selected at the *ex ante* stage, this facilitates the *interim* and *ex post* evaluation of the selected action, which should follow the *ex ante* phase.

1.1.1 What are the expected benefits of RIA?

RIA can be a time-consuming exercise and normally requires changes in the institutional setting and in the behavior of civil servants, away from procedure-oriented and towards a more performance-oriented, results-based mindset. The expected benefits of implementing a RIA system are of three main types:

- **Efficiency.** When RIA makes use of methods such as CBA and CEA, its use should help administration decide in favor of more efficient policy options, discarding less efficient alternatives. Over time, if correctly implemented, this should lead to greater social welfare through an increase in the net benefits of public policies. However, as will be explained in more detail below, it must be recalled that the notion of efficiency in economics often disregards distributional impacts. For example, when working only on the basis of efficiency, ICT regulators might prefer options that maximize net benefits but do not lead to universal access to broadband, over options that guarantee access to all citizens to at least basic broadband.
- **Transparency.** RIA can increase the transparency of public policy since it forces public administrations to motivate their actions in writing, and by explaining why the proposed course

estimated through benchmarking with other jurisdictions (US) and through law and economic models. (IF parts of this is based on previous work done, say it up front.)

⁵ The status quo option refers to the situation at the moment in which the IA is carried out. The “no policy change” option implies an assessment of the likely evolution of the market at hand absent specific regulatory intervention. Again, see the Impact Study “Making private antitrust damages actions more effective in the EU” for a discussion and an application.

of action is more desirable than available alternatives, including the option of doing nothing. This way, administrations do not present themselves anymore as “black boxes”, which take decisions with no explicit, structured justification. Of course, the transparency effect of RIA is more significant whenever RIA documents are made public: without adequate publicity of RIA documents, most of the added value of the procedure might fade away, as the possibility for stakeholders to access the content of the RIA (possibly when the document is still in progress) provides stimulus to the administrations that draft the document. In some countries (e.g., Italy), the quality of RIA has remained low also as since the government has never decided to publish documents online.

- **Accountability.** The use of RIA also promotes the accountability of governments, *i.e.* their responsibility for the outcomes generated by policy. This occurs in particular when administrations that propose new regulations or legislation draft their own RIA, and the latter becomes a key input for the drafting of the rules. The accountability effect is also stronger when governments commit to monitor the impacts of the proposed rule and evaluate it over time, within the so-called “policy cycle” (see below, Section 1.1.2). Accountability is weaker whenever

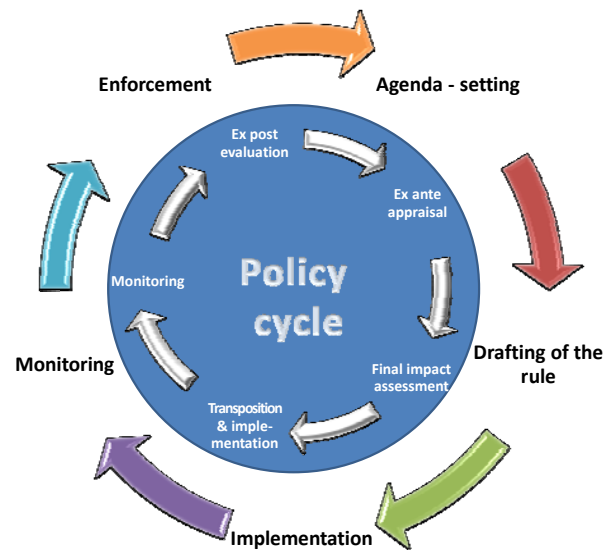
Besides these widely acknowledged benefits, it must be recalled that the wider benefits of adopting RIA are often very difficult to communicate, especially since it is very difficult to establish a counterfactual scenario. Ironically, RIA demonstrates its value added more clearly whenever it leads to the rejection of a proposal, rather than when it leads to adoption. Unfortunately, the former case is uncommon at best.

Against this background, it is possible to state that the benefits of RIA, although difficult to communicate, are evident whenever RIA provides an input to a proposal that will not be modified at a later stage, for example in Parliament. For example, the European Commission performs RIA on its major proposals, but the latter are most often heavily amended by the European Parliament and the Council of the EU before they become legislation..

1.1.2 RIA in context: the “policy cycle”

Too often, RIA has been implemented “in isolation”. This is a recipe for failure, since RIA alone cannot produce its intended transparency, accountability and efficiency effects. To the contrary, countries that have introduced RIA alongside with a thorough public management reform and a holistic view of the policy cycle have reaped the benefits of a full-fledged regulatory management system. More specifically, the so-called “policy cycle” includes both tools for the *ex ante* analysis and for the *ex post* evaluation of public policy; and both tools for the analysis of the flow of individual policy measures, and the *stock* of the existing corpus of legislation in given sectors. For what concerns the life of an individual rule, figure 1 below shows both the policy cycle (outer circle) and the cycle of smart regulation tools that accompany each phase (inner circle). As shown in the figure, the outer circle distinguishes between the agenda-setting phase of legislation (often, coinciding with preparatory documents or primary legislation), the drafting of individual rules, the implementation phase, the monitoring of compliance and the enforcement of the rule itself. Against this background, a responsive administration performs an *ex ante* RIA of preliminary phases, but also provides for monitoring and evaluation indicators and an *ex post* evaluation, which itself leads to the identification of the need for further action and a new *ex ante* assessment phase.

Figure 1 – The “policy cycle”



Source: Author .

RIA can become an integral part of a regulatory management system whenever it:

- Incorporates the results of a sound consultation process;
- Contains indicators for monitoring the legislation at hand over time;
- Contains a “review clause” which sets a timeframe for evaluating the performance of the legislation over time (e.g. after 5 years).

This way, RIA becomes a very important piece of a broader puzzle, in which administrations behave responsible in all phases of the policy cycle and learn from possible mistakes in the adoption of policies by reacting promptly to policy failures and communicating to stakeholders the reasons for changes in policy.

1.2 International RIA models

RIA was first introduced in the United States in 1981. Another early adopter of a RIA requirement was Australia (1985). By the mid-1990s approximately 12 OECD countries had implemented RIA requirements of some form, although the scope of the required analysis varied considerably. By 2000, 20 of 28 OECD countries had implemented RIA requirements. Currently, virtually all OECD countries use RIA. RIA requirements had also begun to be strongly promoted to its client countries by the World Bank. As a result, an increasing number of developing countries have now adopted RIA requirements.

1.2.1 The US RIA model: a brief introduction

The main reasons that led to the introduction of RIA were: (i) the need to ensure that federal agencies belonging to the government in the US would justify the need for regulatory intervention

before regulating, and would consider light-touch means of intervention before engaging into heavy-handed regulation; (ii) the need for the centre-of-government to control the behavior of agencies, to which regulatory powers have been delegated⁶; and (iii) the need to promote the efficiency of regulatory decisions by introducing an obligation to perform cost-benefit analysis within RIA.

Underlying the introduction of RIA was, from a more general viewpoint, the idea that policymakers should be led to take informed decisions, which are based on all available evidence. In the case of the United States, this idea was initially coupled with a clear emphasis on the need to avoid imposing on the business sector unnecessary regulatory burdens, a result that was in principle guaranteed by the introduction of a general obligation to perform cost-benefit analysis of alternative regulatory options and justify the adoption of regulation on clear “net benefits”. Although the US system has remained almost unaltered, the initial approach was partly modified the emphasis was shifted from cost-reduction to achieving a better balance between regulatory costs and benefits.

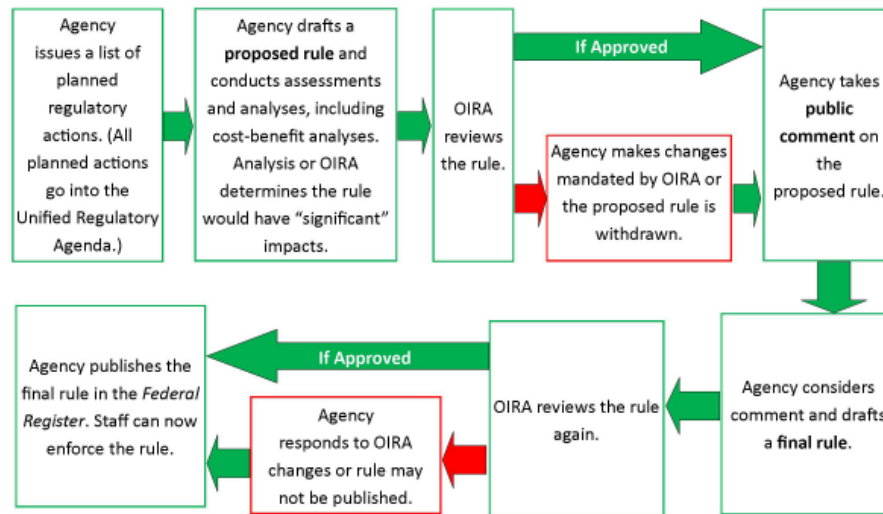
The first steps of RIA were also accompanied by a reform of the governance arrangement adopted by the US administration for the elaboration of regulatory proposals. As a matter of fact, as will be recalled more in detail below, RIA cannot exist in isolation, and requires suitable institutional and organizational arrangements. In the case of the US, the most notable features of the system were the following:

- **RIA was introduced as a mandatory procedural step in an already existing set of administrative rules.** In particular, the 1946 Administrative Procedure Act already mandated that draft regulatory proposals presented by Federal agencies (“Notice of Proposed Rulemaking”, NPRM) be published for consultation period termed “notice and comment”. From 1981, the RIA document has to be attached to the NPRM as an explanatory document, which can enable more structured and informed comments on the side of stakeholders.
- **The introduction of RIA required the creation of a central oversight body in charge of scrutinizing the quality of RIAs produced.** Put simply, the center-of-government cannot pretend to have the same level of specialization of Federal Agencies such as, *e.g.*, the Environmental Protection Agency for environmental issues or the Department of Transportation for transport-related issues. However, if these agencies are asked to complete a cost-benefit analysis in support of their policy decision, an economist would be able to read it and evaluate its quality. This is why the Office of Information and Regulatory Affairs (OIRA) was created, which since then receives and scrutinizes all regulatory proposals filed by the agencies and issues an opinion which – although not binding – normally strongly affects the decision whether to move on with the regulatory proposal, or revise it together with the underlying RIA⁷.

Figure 2 below shows the basic rulemaking process for significant rules in the United States.

⁶ Posner, E.A. (2001), Controlling Agencies with Cost-benefit Analysis. A Positive Political Theory Perspective, University of Chicago Law Review, Vol. 68, 2001.

Figure 2 . Federal rulemaking process in the US: main steps for significant rules



Source: US Center for effective government

Since 1981, thousands of RIAs have been produced by US agencies, and many of them have gained considerable knowledge in the practice of cost-benefit analysis. Our brief analysis of the US RIA model, however, reveals a number of specific peculiarities, which should be duly taken into account in assessing the possibility to “export”, or “transplant” the US model into other countries.

- **Narrow scope.** In the US RIA is mandatory only for Federal agencies and thus only for secondary legislation proposed by these agencies. Neither regulation by independent agencies (e.g. the Federal Trade Commission, the Securities and Exchange Commission, the Federal Communications Commission), nor primary legislation discussed in Congress (e.g. the Affordable Healthcare Act or “Obamacare”) are subject to an obligation to perform RIA. Moreover, since the Clinton administration the scope of the system has been further narrowed down since only the “major” new federal regulations were made subject to the obligation to carry out RIA. These are regulations that meet certain characteristics, including an expected impact of at least 100 million USD⁸.
- **A focus on cost-benefit analysis.** The US RIA system is clearly and explicitly based on the practice of cost-benefit analysis (CBA). This is intimately related to the rather narrow scope of the system: as a matter of fact, as will be illustrated below, CBA is often considered unfit for primary legislation, since it does not take into account distributional impacts, and requires the monetization of all costs and benefits associated with the proposed regulation. Using CBA for

⁸ More specifically, RIAs are mandatory for government agencies only when they refer to ‘significant regulatory actions’ – i.e., those that: i) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; ii) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; iii) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or iv) raise novel legal or policy issues arising out of legal mandates, the President’s priorities or the principles set forth in EO 12,866.

secondary legislation is, to the contrary, more widely accepted given that the distributional consequences of regulation are less apparent and are normally rooted in the underlying piece of primary legislation: that said, the use of CBA in the US RIA system is still subject to a hectic debate in the US⁹.

- **A presidential democracy.** The introduction of RIA in the US, as well as the specific features of the US system, strongly depend on the fact that the It, in the US, as was remarked by authoritative scholars, the RIA system became a fundamental element of a “principal-agent” mechanism, in which the principal (the White House) sets priorities and outcomes, and agents (the Federal Agencies) regulate to meet those priorities and outcomes. RIA is thus a way to better control the agents, and ensure that their incentives are aligned with those of the principal¹⁰.

These and other circumstances – *i.a.*, the fact that CBA can be scrutinized by courts, the existence of remarkable competences and skills in both OIRA and the agencies, and the outstanding development of universities, research centers, think tanks and other stakeholders able to contribute their opinion to the “notice and comment” procedures – make the US RIA system a rather peculiar experience, very difficult to replicate in other countries. However, this has been often disregarded in the international experience, as will be made clearer below.

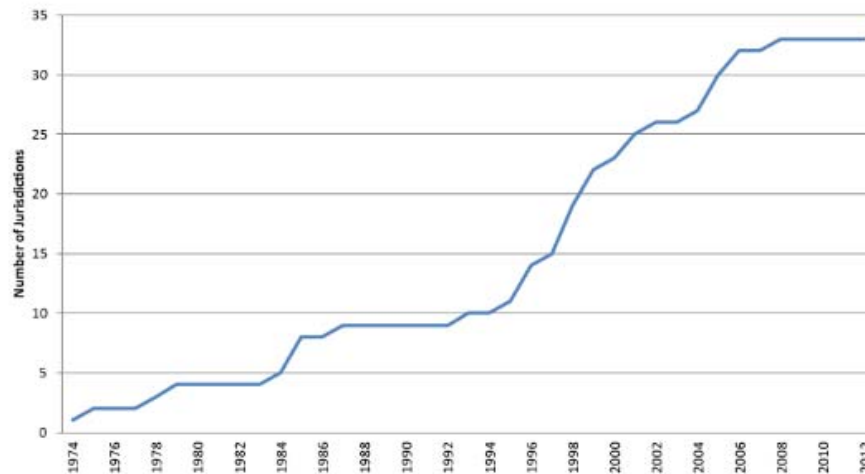
1.2.2 RIA around the world: developed economies

In the past three decades, several governments have adopted procedures aimed at ensuring a more regular and structured use of economic analysis in support of regulatory decisions. As shown in figure 2 below, between 1974 and 2012 the number of OECD countries with a formal requirement to perform RIA in support of public regulatory decisions increased from 1 to 33. Also, many developing countries – often funded by international donors such as the World Bank, the Asian Development Bank or the Inter-American Development Bank – have experimented with RIA in the past two decades, with alternate fortunes. The introduction of RIA has very seldom included the ICT sector, at least as primary concern. Most often, in developing countries emphasis is placed on reforms aimed at the simplification of business-related legislation, rather than on individual sectors such as ICT. We will get back to this in more detail in Sections 3 and 4 below.

⁹ See section 2.2. below For an illustration of the methodological challenges of using cost-benefit analysis.

¹⁰ See Posner (2001), *supra* note 10.

Figure 3 – OECD Countries with a formal requirement for RIA, 1974-2012



Source: OECD

Among the most successful RIA experiences to date, besides the US one, it is possible to mention the UK, Canada and Australia. In all these countries, RIA is used systematically and has been successfully mainstreamed into the policy cycle of government.

In **Canada**, almost all new federal regulations are required to have a Regulatory Impact Analysis Statement (RIAS), which are made up of six parts: Description, Alternatives, Benefits and costs, Consultation, Compliance and enforcement, and Contact. A detailed seven-step procedure exists the pre-publication phase of regulatory proposals, which includes a “triage” procedure for the determination of the level of impact generated by the proposal, coordinated by the Regulatory Affairs Sector of the Canadian Treasury Board Secretariat. Interestingly, the Canadian Treasury Board Secretariat follows a life-cycle approach to regulatory management and has created a Centre of Regulatory Expertise (CORE) to assist in the gradual development of expertise on better regulation inside the administration. CORE provides expert advice and services to help departments build their internal capacity to develop sound, evidence-based regulatory proposals. CORE experts offer guidance on analytical services (especially risk assessment, cost-benefit analysis, performance measurement, evaluation plans), coaching and advisory services, workshops and presentations, and peer review services¹¹.

In **Australia**, Regulatory Impact Statements follow seven steps: problem definition, objectives, options, impact analysis, consultation, conclusion and Recommended Option and provisions for implementation and review. The Government has agreed that, in the absence of exceptional circumstances as confirmed by the Prime Minister, a regulatory proposal with likely impacts on business or the not-for-profit sector that are not minor or machinery cannot proceed to the Cabinet or other decision makers unless it has complied with the RIA Framework. Currently, where a RIS is required for a regulatory proposal to be considered by Cabinet, the RIS (assessed as adequate by OBPR) must be circulated to agencies preparing coordination comments on the Cabinet submission.

¹¹ See www.regulation.gc.ca.

The RIS is to be made available to Cabinet, preferably attached to the final Cabinet submission or memorandum¹².

In **Mexico**, RIA has been applied for more than a decade and was recently reformed to align it with OECD best practice. The National Regulatory Improvement Commission (COFEMER) exercises quality controls of new and existing regulations by issuing opinions on the drafts and RIAs prepared by line ministries and regulators¹³. COFEMER's opinions are not legally binding: nevertheless, given that all of COFEMER's opinions, as well as the draft regulations and RIAs, are public, in the majority of cases, line ministries and regulators do follow its opinions. In addition, COFEMER's final opinion is a requisite to publish regulation in the Official Journal of the Federation (DOF), which is absolutely necessary to provide the regulation with binding power and legality.

In the **United Kingdom**, Impact Assessments are generally required for all Government interventions of a regulatory nature that affect the private sector, civil society organizations and public services. The procedure was initially limited to the assessment of compliance costs for the business sector, and since 1998 evolved into a full-fledged system of cost-benefit analysis. Today, RIA is a common practice in many sectors, including ICT: a peculiarity of the UK is that the telecommunications regulator OFCOM has published in 2005 a document describing its own approach to RIA¹⁴.

In the **European Union**, an impact assessment system was introduced in 2002. The EU peculiarity is that the system applies to all major new policy initiatives of the European Commission, from soft law documents (Communications, recommendations) to far-reaching, cross-cutting new EU directives and regulations. Since 2003, almost 900 impact assessments have been completed by the European Commission, and from 2012 onwards also the European Parliament has created an internal Directorate for Impact Assessment (IMPA), which started to commission in-depth analyses of European Commission RIA documents, and performs RIAs on major amendments proposed by members of the European Parliament, including of course all proposals that affect the ICT sector.

In **the Republic of Korea**, months after his inauguration, President Kim directed the cabinet to cut the existing regulations by half. The initiative was driven by the newly-created Regulatory Reform Committee (RRC) following the 1997 crisis. In Korea, political support did not wane as time passed, as this policy agenda was supported by a strong constituency. When a few months later RRC reported lukewarm results achieved by ministries and agencies, the President ordered them to resubmit the plans so that the existing regulations could be cut down by more than 50% by the end of 1998 (OECD, 2007). According the basic Act on Administrative Regulation (BAAR), every regulatory body in Korea is compelled to conduct RIA whenever proposing new or revised regulations. RRC is in charge of guiding, advocating and reviewing regulatory bodies to conduct RIA through publishing the RIA guidance. In order to increase regulatory transparency, since July 2006 the Korean government has opened RIA reports to the public through ministries' websites during the public notice period of

¹² See Borthwick, D. and Milliner, R. (2012), Independent Review of the Australian Government's Regulatory Impact Analysis Process, April.

¹³ The COFEMER was created in year 2000, through a reform to the Federal Administrative Procedures Law. It is an autonomous agency of the Ministry of the Economy, and is supported by the Federal Regulatory Improvement Council which is comprised by five ministries, a number of government agencies, as well as representatives of the private and social sectors, and scholars. It employs 60 professionals, mainly experienced on fields such as Economics and Law.

¹⁴ See http://stakeholders.ofcom.org.uk/binaries/consultations/better-policy-making/Better_Policy_Making.pdf

proposed regulations which is 20 days. If proposed regulations affect foreign parties, ministries are recommended to extend the public notice period to 60 days

In **New Zealand**, the government explicitly stated that it expects that departments will not propose regulatory change without clearly identifying the policy or operational problem it needs to address, and undertaking regulatory impact analysis (RIA) to provide assurance that the case for the proposed change is robust; and careful implementation planning, including ensuring that implementation needs inform policy, and providing for appropriate review arrangements. The government's RIA framework encourages an evidence-based approach to policy development which helps ensure that all practical options for addressing the problem have been considered and the benefits of the preferred option not only exceed the costs, but will also deliver the highest level of net benefit. RIA should be undertaken for any policy work involving regulatory options that may result in a paper being submitted to Cabinet. "Regulatory options" means the potential introduction of new legislation (bills or regulations) or changes to/the repeal of existing legislation. This analysis involves the preparation of a Regulatory Impact Statement (RIS) that summarizes the RIA that has been undertaken. Certain information about the RIA undertaken must also be included in the Cabinet paper. A RIS is normally provided when papers are submitted to Cabinet committees for policy approval. In rare circumstances, the policy proposal and draft regulations may be submitted together. In these cases, the usual procedure is for the paper to be submitted to the relevant 'policy' Cabinet committee, rather than directly to the Cabinet Legislation Committee.

1.2.3 RIA around the world: emerging and developing countries

Among emerging economies and developing countries, there are several examples of attempts to introduce RIA as a systematic assessment of the impacts of proposed new legislation or regulation. Back in 2005, Ladegaard (2005) observed that "*a quick scan of easy-available sources suggests that RIA in one form or the other is carried out in, among others, Tanzania, Uganda, Bulgaria, Croatia, Serbia, Romania, Estonia, Lithuania, Latvia, Poland, Mexico, South Korea, the Philippines, Algeria, Botswana, Jamaica, Albania, South Africa, Sri Lanka and Ghana*". Since then, new countries have added to the list. More in detail:

- In Latin America, countries like **Brazil, Chile, Colombia, Costa Rica, Ecuador** are currently trying to introduce more systematic use of RIA in their administrations¹⁵.
- In Asia, *i.a.* **Cambodia, Lao PDR, Malaysia, Mongolia, Philippines** and **Vietnam** are piloting regulatory impact assessment to assure quality of new regulations and improve the business climate. The Philippines and Malaysia have also established national level bodies made up of senior figures from the public and private sectors to assist in various regulatory reform efforts¹⁶.
- In Africa, among others, **Botswana, Egypt, Uganda, Ghana, Nigeria** and **Tanzania** have run pilot projects to implement RIA. In **South Africa**, RIA was approved by Cabinet in February 2007,

¹⁵ See the report by the COFEMER, Reforma Regulatoria an America Latina, available online at http://www.cofemer.gob.mx/images/cofemer/ReformaRegulatoria_AL.pdf.

¹⁶ See OECD, Summary of the Regulatory Reform Dialogue at the 2014 OECD Southeast Asia Regional Forum 10th meeting of the Regulatory Policy Committee, 14-15 April 2014, The OECD Conference Centre, Paris, France, GOV/RPC (2014)8, available online at the following website: [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=GOV/RPC\(2014\)8&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=GOV/RPC(2014)8&docLanguage=En)

following a detailed joint study commissioned by the Presidency and the National Treasury to investigate the possibility of introducing RIA. Guidelines are available since 2012¹⁷.

In many of these countries, the introduction of RIA occurred within the context of “ease of doing business” reforms, in particular in support of legislation on streamlining business licensing systems. The problem that emerged in most of these cases is the lack of a more comprehensive long-term strategy to mainstream RIA within the policy process of the country at hand. This inevitably led to the loss of momentum of RIA once those initial pilots have expired. A recent workshop organized in Pretoria, South Africa by the EU-funded project LIAISE led to similar conclusions¹⁸.

2 RIA: main challenges and lessons learnt

Thirty years of experience with RIA have led to a better understanding of how, and under what circumstances, RIA can become a driver of regulatory quality and, eventually, of better regulatory outcomes for society as a whole. Still, today many countries feature a significant “adoption-implementation gap”, which implies that the challenges to be overcome to successfully mainstream RIA within the regulatory process are tough and difficult to overcome. As a matter of fact, there is no “one-size-fits-all” set of steps that should be followed to successfully implement RIA: national strategies should account for the legal tradition, political features and many other specific aspects to be successful.

Below the main procedural and methodological challenges that are associated with the adoption and implementation of RIA are summarized.

2.1 Procedural and organizational challenges

One of the main procedural challenges in the introduction of RIA is the need for well-designed **legislative/regulatory planning**. In many countries the regulatory process is too chaotic and last-minute to leave time for the preparation of a RIA document; this, in turn, means that countries that cannot guarantee an orderly planning of the legislative or regulatory activities, RIA will find enormous difficulties.

Second, the implementation of RIA requires adequate **governance arrangements**, and in particular the existence of a **regulatory oversight body** in charge of guiding administrations in the drafting of RIA, advocating changes in legislation and scrutinizing the quality of the RIA documents that are produced. Oversight bodies are generally located close to core executive functions: either at the center of government itself, or as part of central ministries. Their core functions are co-ordination and supervision, challenge and scrutiny, training, advice and technical support and advocacy.

Third, RIA requires a wide **acceptance in the administration**. Very often, civil servants are hostile to the adoption and implementation of RIA, which they see as yet another administrative requirement

¹⁷ See Guidelines for the implementation of the Regulatory Impact Analysis/assessment (RIA) process in South Africa (2012), available online at the following website:
<http://www.thepresidency.gov.za/MediaLib/Downloads/Home/Publications/RegulatoryImpactAssessment/Guidelines2/Regulatory%20Impact%20Assessment%20Guideline%20February%202012.pdf>

¹⁸ See <http://beta.liaise-toolbox.eu/content/liaise-workshop-regulatory-impact-assessment-developing-and-emerging-countries-held-pretoria>.

in their often already heavy procedures. This problem often takes time to overcome: however, the more civil servants are made accountable for their actions, the more they are observable by external stakeholders, the more they will find that RIA is their ally, rather than an enemy.

Fourth, RIA requires **adequate skills**. This does not mean that all civil servants drafting RIA should be Ph.D. economists: what is needed is familiarity with the types of mechanisms at hand when policy measures enter into force. Many officers in administrations tend to have limited knowledge of all the types of costs and benefits that can be generated by legal rules, and often ignore the spillover or indirect effects generated by rules.

Finally, RIA requires **transparency in the administration and accessibility of public information**. In many countries, access to information produced by governments is still restricted, which in turn can undermine the credibility of the RIA exercise. To the contrary, countries that give themselves minimum standards for consulting stakeholders and rules governing access to information (e.g. a “freedom of information act”) can harness more easily the potential of RIA as a tool to streamline the policy process.

2.2 Methodological challenges

Besides procedural and organizational issues, RIA also faces very significant methodological challenges, which can be summarized as follows.

- **Get the scope right: primary v. secondary legislation.** It is very important that policymakers identify the scope of the RIA mechanism they wish to introduce. As mentioned above, the original US RIA model was made applicable only to secondary legislation. In other countries, RIA was made applicable also to primary legislation proposed by government decree; and fewer countries have attempted to introduce RIA in parliaments. It is very important to recall that, depending on the type of legal instrument at hand, the methods used to compare regulatory options and even the presentation of the preferred policy option may change. The introduction of an obligation to perform RIA in national parliaments (and even most notably in the European Parliament) has often faced almost insurmountable difficulties. In the field of ICT, a key choice is whether to make RIA mandatory for the general framework legislation (e.g. the telecommunications law, or a country’s digital agenda), and/or for individual regulatory decisions (e.g. setting termination rates, or choosing between modes of spectrum allocation),
- **Get the scope right: all regulations or only major ones?** Administrations wishing to introduce RIA have to choose whether to make RIA compulsory for all acts of regulation, or only for the most important ones. Most countries opted for the latter solution, also given the fact that RIA takes time and resources to complete, and in some cases the benefit of carrying out RIA might not justify the corresponding cost. One key trade-off that governments face is whether to set a minimum threshold for the obligation to perform RIA (as in the US, where significant rules that undergo RIA are defined also by means of a quantitative threshold); or whether to introduce a “principle of proportionate analysis”, which makes the depth of the RIA exercise dependent on the expected impact of the proposal¹⁹.

¹⁹ The principle of proportionate analysis is explained in the European Commission Impact Assessment Guidelines. The Guidelines explain that the “proportionate level of analysis” is not only about the depth and scope of the analysis or the drafting of the IA report. It refers to the whole IA process - data collection efforts and stakeholder consultation, the level of ambition of the objectives, options and

- **Choose the methodology carefully.** Very often RIA is equated with the practice of cost-benefit analysis: this statement however is incorrect, since RIA can host a variety of methodologies, which can be chosen according to the type of analysis to be performed. In general, the choice of the methodology depends on the types of impacts to be assessed, their extent, and the likelihood that the regulatory proposal generates substantial indirect costs and benefits. The following methodologies are most often used in RIA:
 - *Least-cost analysis.* When the benefits of a given regulatory intervention are set, the analysis should focus on achieving those benefits at the least possible cost;
 - *Cost-effectiveness analysis.* Especially when RIA refers to public expenditure, options might be compared based on their “value for money”. This means that the choice of the preferred option will be made based on the so-called “benefit/cost ratio”, *i.e.* dividing expected benefits by the corresponding costs. Cost-effectiveness analysis does not require that benefits are expressed in monetary values: for example, two options could be compared based on how many lives they save per dollar spent.
 - *Cost-benefit analysis* requires that all major direct and indirect costs and benefits of the alternative regulatory options are identified and monetized. The option that features the highest net benefits – *i.e.*, benefits minus costs – will be considered as the most efficient and thus the preferred one. Given the need to monetize both costs and benefits, cost-benefit analysis can be challenging and has been heavily criticized as a basis for policymaking, especially when distributional impacts are significant (see box 1 below).
 - *Multi-criteria analysis* allows a comparison of alternative policy options along a set of pre-determined criteria. For example, criteria chosen could include the impact on SMEs, the degree of protection of fundamental rights, consumer protection, etc. Multi-Criteria Analysis is particularly useful when RIA has to be reconciled with specific policy objectives, and as such is used as an instrument of policy coherence. This method is more likely to capture distributional impacts, although this crucially depends on the criteria chosen for evaluating options. For example, in the ICT sector the criteria chosen to analyze options could include universal access, affordability, incentives to invest in new technologies/infrastructure, interoperability, etc.

Box 1 – When to use Cost-Benefit Analysis

There are pros and cons of choosing CBA as the method to be used in comparing policy proposals. The pros mostly lie in the ability of CBA to use an objective unit of measurement (monetized values) to compare alternative options and choose the one that maximizes the “size of the pie”, *i.e.* societal welfare as described in mainstream economics. The shortcomings, however, are often quite critical for CBA, and mostly refer to the assumption that income can be a proxy for happiness or satisfaction, the fact that it willingly ignores distributional effects (despite some attempts to adjust the methodology to reflect them), and its lack of objectivity when it comes to the selection of certain

delivery mechanisms, the type of impacts to be examined, and the arrangements for monitoring and evaluation. While clarifying that it is the responsibility of the author service to determine the level of analysis, the Commission observes that this decision should be based on the significance of likely impacts, the political importance of the initiative and also on where the initiative is situated in the policy development process. See SEC(2009)92, at Section 3.2.

parameters (e.g. the inter-temporal discount rate), which can tilt the balance in favor of certain regulatory options over others.

Based on these descriptions, one should choose cost-benefit analysis as the method to be used to compare alternative policy options if:

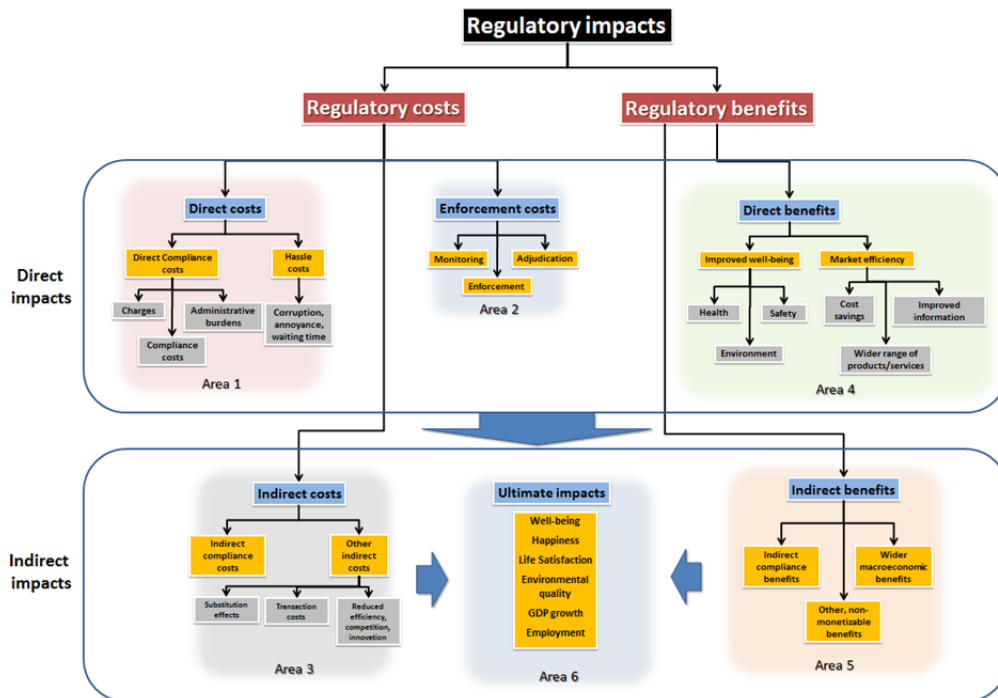
- **Both benefits and costs vary** depending on the regulatory alternative chosen (if not, consider least-cost analysis).
- **At least all direct benefits and direct costs can be monetized**, covering where possible the economic, social and environmental impacts of the proposal at hand (if benefits can be quantified, but not monetized, consider cost-effectiveness analysis): this requires an assessment of data availability in order to understand whether CBA will be feasible within a reasonable time frame.
- **The expected magnitude of impacts justifies the effort and time needed to perform CBA** (as a full-fledged CBA is normally more time-consuming than other, more qualitative techniques). Similarly, the choice to perform cost-benefit analysis must be read also in light of the application of the principle of proportionate analysis, which means that the depth of the cost-benefit analysis exercise, as well as the time and the resources devoted to it, must be made dependent *i.a.* on the type of proposal at hand (e.g. whether binding or not binding, whether cross-cutting or narrow), as well as on the *prima facie* expected impact of the proposal.
- **Distributional impacts are unlikely to be substantial** (otherwise, consider multi-criteria analysis, or break down CBA by affected stakeholder without aggregating costs and benefits into a net benefits analysis).

Source: Author.

2.2.1 Identifying the costs and benefits of regulation

Regardless of whether RIA is eventually based on CBA or not, it is always essential to identify all relevant direct and indirect costs and benefits that would emerge if the available regulatory options are implemented. This can enable a more meaningful comparison of regulatory options. Figure 4 below shows a general map of the impacts generated by legal rules. This map is intended for ease of visualization of the full landscape of regulatory impacts: as such, it should be taken as a tentative exercise, not as an attempt to establish once and for all the categories of costs and benefits that can emerge from regulation (as a matter of fact, guidance documents on impact assessment and cost-benefit analysis from all over the world show different taxonomies and typologies of costs and benefits).

Figure 4 – A map of regulatory costs and benefits



Source: Renda *et al.* (2014)

As shown in the figure, legislation normally produces both direct and indirect impacts, which in turn can generate second-order effects (“ultimate impacts”). More in detail, Figure 4 highlights six main areas of regulatory impacts. For what concerns costs:

- **Area 1 includes direct costs from regulation (DC)**, such as direct compliance costs and hassle/irritation burdens.
 - *Direct compliance costs* include:
 - *Regulatory charges*, which include fees (such as spectrum and licensing), levies (e.g. copyright levies), taxes, etc.
 - *Substantive compliance costs*, which encompass those investments and expenses that are faced by businesses and citizens in order to comply with substantive obligations or requirements contained in a legal rule (e.g. the need to install new equipment to avoid interference between co-primary uses of the 700 MHz band); and
 - *Administrative burdens* are those costs borne by businesses, citizens, civil society organizations and public authorities as a result of administrative activities performed to comply with information obligations included in legal rules (e.g. keeping records of security incidents and notify each breach of security to public authorities).

- *Hassle costs* are often associated with businesses, but they apply equally well to consumers: they include costs associated with waiting time and delays, redundant legal provisions, corruption etc.
- **Area 2 refers to enforcement costs (EC).** These costs are often downplayed in *ex ante* RIA. They refer to key phases of a rule's life such as monitoring, enforcement and adjudication. They include costs related to dispute resolution, litigation, appeals, government inspections, etc.
- **Area 3 encompasses indirect regulatory costs (IC),** which refer to costs incurred in related markets or experienced by consumers, government agencies or other stakeholders that are not under the direct scope of the regulation. These costs are usually transmitted through changes in the prices and/or availability and /or quality of the goods or services produced in the regulated sector. Changes in these prices then ripple through the rest of the economy, causing prices in other sectors to rise or fall and ultimately affecting the welfare of consumers²⁰. This costs also include the so-called "indirect compliance costs" (*i.e.* cost related to the fact that other stakeholders have to comply with legislation) and costs related to substitution (e.g. reliance on alternative sources of supply), transaction costs and negative impacts on market functioning such as reduced competition or market access, or reduced innovation or investment. For example, if a given auction design generates costs for telecom operators, which are likely to be passed-on downstream in the form of higher retail prices for consumers, this should be counted as an indirect regulatory cost.

Performing an *ex ante* RIA requires constant awareness of the fact that total costs arising from a given regulation are given by the following sum: **(DC + IC + EC)**. Any assessment that partly or fully, intentionally or inadvertently omits the analysis of one or more of these categories of costs is likely to provide an incomplete, and thus inaccurate account of the costs generated by the legal rule.

For what concerns benefits, Renda et al. (2014) suggest the following categorization:

- **Area 4 includes direct regulatory benefits.** Here, the following categories of benefits can be distinguished:
 - The improvement of the well-being of individuals, which in turn encompasses social and economic condition as well as health, environmental and safety improvements; and
 - Efficiency improvements, which include, notably, cost savings but also information availability and enhanced product and service variety for end consumers, and greater productivity (as is often the case when a proposal generated enhanced access to, and usage of, ICT).
- **Area 5 includes indirect regulatory benefits,** which encompass:
 - Spillover effects related to third-party compliance with legal rules (so-called "*indirect compliance benefits*");
 - *Wider macroeconomic benefits*, including GDP improvements, productivity enhancements, greater employment rates, etc.; and

²⁰ For example, if a given regulation increases the cost of energy production, this will be reflected in the cost structure of a number of industries, which might then pass-on part of this additional cost downstream along the value chain and eventually to end consumers. Similarly, if a certain regulation on the safety of chemical substances entails the withdrawal of certain products, downstream users will have to face replacement costs.

- *Other non-monetizable benefits*, such as protection of fundamental rights, social cohesion, international and national stability, etc.

- **Area 6 contains a list of “ultimate impacts” of regulation**, which overlap with the ultimate goals of regulatory intervention: even if some regulations directly aim at achieving these benefits (in which case, we would include them in Area 4), normally all regulations aim, as an ultimate impact at achieving some advancement in social welfare, which can be described in terms of efficiency or in others terms: these ultimate impacts encompass well-being, happiness and life satisfaction, environmental quality, and more economic goals such as GDP growth and employment. This area lies at the intersection between regulatory impacts and regulatory goals. It is important to highlight it in a visual representation of regulatory impacts for at least two main reasons. First, while the first applications of cost-benefit analysis to legal rules (as in the US RIA system) chiefly looked at efficiency and thus at the calculation of net benefits for the justification of action in regulation, many governments today adopt a wider variety of regulatory goals when regulating, which leads to the measurement of distributional effects and, more generally, at more subjective outcomes such as life satisfaction. Second, a number of methods are being developed to track directly the ultimate impact of a given future state of the world (e.g. life satisfaction), rather than developing the analysis from the comparison of costs and benefits. These approaches (often termed “measurement of subjective well-being”, or “happiness metrics”) try to avoid some of the methodological shortcomings of neoclassical cost-benefit analysis to measure: among others, an important feature of these methods is that instead of relying on income as a proxy of happiness, they try to measure the latter directly²¹. The availability of broadband for all citizens, for example, can generate impacts in terms of life satisfaction, due to the elimination of administrative burdens and to enhanced possibility of communication. The transition towards tele-work is another good example, as it leads to enhanced possibilities for those wishing to enjoy family life and reconcile it with working duties.

2.2.2 Monetizing non-market impacts

One of the key challenges in RIA is the quantification and monetization of benefits, especially when these benefits are related to non-market goods such as health, safety and the environment. Economists have engaged into a never-ending debate on the viability of methods that are aimed at attaching a monetary value to these benefits: some critics argue that attempting to attach a monetary value to impacts such as saved human lives or lost biodiversity amounts to “knowing the price of everything, and the value of nothing”²².

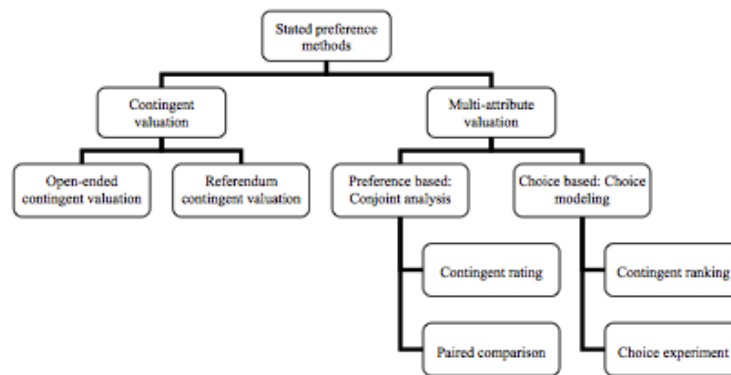
²¹ See Renda, A. (2011), *Law and Economics in the RIA World*, Intersentia, Amsterdam. And see also Daniel Fujiwara and Ross Campbell (2011), *Valuation Techniques for Social Cost-Benefit Analysis: Stated Preference, Revealed Preference and Subjective Well-Being Approaches. A Discussion of the Current Issues*, Report for the UK government. Available online at the following website: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209107/greenbook_valuationtechniques.pdf.

²² F. Ackerman and L. Heinzerling, *Priceless: on Knowing the Price of Everything and the Value of Nothing*, New York: The New Press, 2004.

There are two main methods used by economists to monetize benefits that are not subject to market exchange. Both are essentially based on the concept of “willingness to pay” (WTP):

- **Revealed preference** methods are based on the assumption that people’s behavior, when spontaneous, is the best possible indication of the preference of individuals. For example, the extent to which some consumers are willing to pay for higher broadband speeds reveals their associated willingness to pay.
- **Stated preference methods** are used when it is impossible to infer individuals’ WTP from an observed behavior or by means of any revealed preference method. These models imply that individuals surveyed state their WTP (or willingness to accept compensation, WTA) for a given change in policy, or a related impact. Inevitably, the accuracy of these estimates depend on the ability of the analyst in designing the survey and framing the context in which surveyed individuals will respond to their questions. Figure 5 below shows the most common variants of the stated preference models.

Figure 5 – Families of stated preference methods



Source: Merino-Castello (2003).

In summary, in mainstream economic theory, benefits are calculated as the sum of the WTPs of all individuals involved by a given policy change. To the extent that this calculation is possible, economists have the possibility of expressing all benefits with a common unit of measurement, *i.e.* money. WTP is a very powerful measurement instrument in cost-benefit analysis. For example, it can measure the maximum amount of money an individual would be willing to pay to improve its or others’ health, to avoid getting hurt, to obtain an environmental improvement or to preserve natural resources, etc. Accordingly, the WTP concept is often used to estimate impacts that are otherwise impossible to measure, such as the preservation of biodiversity: asking people what they would be willing to pay to preserve the environment should give a first-blush assessment of what this is worth to citizens today.

However, many economists doubt that WTP can always be a good proxy for the assessment of benefits. The main reasons can be quickly summarized as follows:

- Income is not a good proxy for utility and happiness;
 - It is rather the “ability to pay”, not the “willingness to pay”, that dictates market choices: people face income constraints that cost benefit analysis often neglects;
-

- People’s happiness depends also on what other individuals are endowed with;
- People sometimes tends to underrate the value of long-term impacts, especially if they are weighed against shorter term ones, due to a lack of inter-generational altruism or simple shortsightedness;
- People make mistakes for what concerns their WTP (due to both bounded rationality and rational ignorance)²³;
- People make mistakes for what concerns the real value associated with their actions;
- People value differently gains and losses due to the “endowment effect”²⁴.

2.2.3 Reconciling RIA with long-term policy goals

As already illustrated in the previous sections, it is important to recall that the original US RIA model is mostly geared towards ensuring that government agencies take “efficient” decisions, *i.e.*, decisions that maximize net benefits for society as a whole. This means that RIAs produced by Federal agencies will tend towards the ultimate goal of maximizing total welfare. This assumption, as recalled above, only holds if one believes *i.a.* that WTP can be taken as a proxy of people’s preferences, wealth can be taken as a proxy for welfare, and income does not exhibit decreasing marginal returns. If one does not, then adopting efficiency as the “litmus test” for adopting legislation might be ill-advised; RIA could still count on CBA, but the results of CBA would only provide a technical input to, and by no means a constraint to, the ultimate political decision to be adopted.

Even beyond the methodological problems of CBA, there may well be cases in which RIA is made functional to objectives other than efficiency. For example, South American countries such as Brazil and Ecuador have specifically launched long-term policy strategies aimed at “quality of life” (*Buen Vivir*), which includes distributional issues such as the eradication of extreme poverty and the reduction of inequalities. The European Union has in 2010 launched a new long-term strategy, termed Europe2020, which includes five headline targets and associated indicators²⁵. In all these cases, governments might want to reconcile the methods and criteria applied in their RIA documents with the targets they have given themselves for the medium-long term: alternative policy options might then be compared not only, and not mostly, based on the net benefits they generate, but rather in terms of their ability to meet the government long-term targets. In this respect, RIA can

²³ Rational ignorance refers to the fact that rational individuals do not find it convenient to acquire all possible information on a future course of action, due to excessive cost of information collection compared to the marginal benefit of acquiring an additional piece of information. Bounded rationality, to the contrary, refers to the fact that people make systematic mistakes that lead them to deviate from a rational course of action.

²⁴ This last critique has led economists to focus also on another proxy for the intensity of individual preferences, *i.e.* WTA. WTA compensation is the minimum amount of money an individual is willing to accept for not receiving a given improvement, or for being deprived of resources or assets they used to possess before. Part of the literature uses also the terms “equivalent variation” and “compensating variation” to denote the value underlying the concepts of WTP and WTA. See, also, the UK Green Book on evaluation, Section 2.1., at http://www.hm-treasury.gov.uk/d/green_book_valuationtechniques_250711.pdf.

²⁵ http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/targets/index_en.htm.

become functional to **greater policy coherence** in government, in addition to the efficiency of public policymaking.

3 Using RIA to make better decisions in the ICT sector

RIA can be a useful support to the quality of policymaking in the ICT sector, and in particular in the policy fields that are most often subject to regulation. Compared to other sectors, ICT policy has been less exposed to the debate on RIA, mostly since in many countries ICT policy is dealt with by regulatory authorities that are independent of government, which means that RIA is not an obligation for telecom regulators. At the same time, the legal status of many agencies in the sector, the highly specialized technical and economic aspect of many of the regulations adopted and the fact that stakeholder consultation is widespread in the sector are factors that make RIA even more potentially useful as a tool that facilitates the dialogue between public authorities and stakeholders, and increase the quality of the debate as well as the quality of the rules enacted.

Against this background, regulators such as FCC in the US, Ofcom in the UK and AGCOM in Italy have adopted own methodologies to carry out RIA of major regulatory decisions. In countries like Jordan and Qatar the telecommunications regulators perform RIA in support of major regulatory decisions. However, in many countries around the world the potential of RIA has not been fully exploited. Below is presented a selection of national experiences with RIA in the ICT sector.

3.1 National experiences with RIA in the ICT sector

Some regulators around the world make regular use of RIA or cost-benefit analysis when adopting their regulatory decisions. For example:

In the **United States** the Federal Communications Commission (FCC), as a non-governmental agency, is not obliged to perform RIA on its major regulations; however, in order to justify its approach to the policy problems it faces it has shown increasing willingness to do cost-benefit analyses. A recent Report of the Administrative Conference of the United States noticed that it is now understood at FCC that cost-benefit analysis is “an expected part of the agency’s decision making,” and that when the Office of the General Counsel reviews rules for compliance with the Administrative Procedure Act and other statutes, they now look to see that the rule contains evidence of having considered costs and benefits²⁶. The surveyed officials said FCC does not just do cost-benefit analyses for “major” rules, but instead views it as a “sliding scale” in which the more important rules generally get more analysis than less important ones. In this respect, the approach is similar to the “principle of proportionate analysis” adopted by the European Commission²⁷.

²⁶ See Copeland in <http://www.acus.gov/sites/default/files/documents/Copeland%20Final%20BCA%20Report%204-30-13.pdf> ; and also <http://www.acus.gov/sites/default/files/documents/Indep%20Agency%20BCAs%20Draft%20Rec%20Final%202-15-2013.pdf> , and <http://www.techpolicyinstitute.org/news/show/23594.html>

²⁷ See above, note 24.

In the **UK**, Ofcom has since 2005 issued a document stating its own approach to RIA²⁸. The document explains the importance of carrying out RIA of policy decisions, with emphasis on the need to consider the “do nothing” option before acting as a regulator. Moreover, Ofcom’s document contains a checklist to be followed in RIA in the telecommunications and media field.

In the European Union, **the European Commission** has performed several RIAs on issues related to ICT policy. In particular, the Directorate General for the Information Society (DG INFOS; now re-named DG CONNECT) has carried out RIAs on 39 proposed policy initiatives between 2003 and May 2014. In addition, during the same period the Directorate General for Research and Innovation performed 24 RIAs on issued that are often tightly related to ICT. This is by far the largest number of RIAs in the field of ICT that can be found worldwide today: for each of these RIAs, the European Commission has sought the identification and assessment of economic, social and environmental impacts of a range of alternative policy options, and almost always coupled the proposals with extensive consultation of stakeholders (at least twelve weeks).

In Canada, some of the RIAs performed by the federal government have affected the ICT world. For example, the new Electronic Commerce Protection Regulations were subject to a RIA in 2013, for the purpose of effectively implementing the Canadian Anti-spam legislation²⁹.

In Colombia, a comprehensive ex post evaluation of the overall impact of the regulatory framework for telecommunications has been performed on an annual basis with the support of external consultants³⁰. The reports issued cover a five-year period and evaluate the impact of major regulatory measures adopted during the selected period, with the use of econometric techniques.

Below, some examples of RIAs carried out in the ICT sector are illustrated in detail.

3.2 Examples

3.2.1 The RIA on the EU Roaming Regulation

The regulation of wholesale roaming tariffs is a very ambitious project of the European Union, which saw the light in 2007, with the first regulation that set a cap on both wholesale and retail tariffs applied by mobile operators in EU27. With the “roaming regulation”, European citizens are much less exposed to outrageous mobile phone bills when travelling to another Member State of the European Union. The related RIA contained a sophisticated cost-benefit analysis, which also incorporated a sensitivity analysis, *i.e.* the European Commission used three possible measures of demand elasticity

²⁸ http://stakeholders.ofcom.org.uk/binaries/consultations/better-policy-making/Better_Policy_Making.pdf

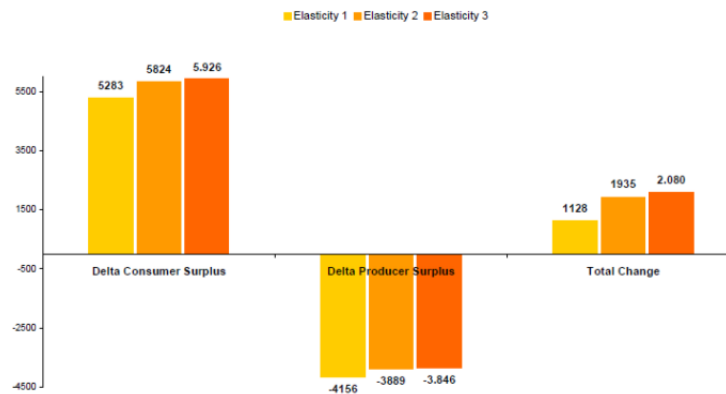
²⁹ “Act to promote the efficiency and adaptability of the Canadian economy by regulating certain activities that discourage reliance on electronic means of carrying out commercial activities, and to amend the Canadian Radio-television and Telecommunications Commission Act, the Competition Act, the Personal Information Protection and Electronic Documents Act and the Telecommunications Act ("Canada's Anti-spam Legislation" or "CASL"). See the impact assessment at <http://fightspam.gc.ca/eic/site/030.nsf/eng/00271.html#fmb1>.

³⁰ See *e.g.*, (CMT (2007), Impacto del marco regulatorio en su conjunto, en relación con la sostenibilidad, viabilidad y dinámica del sector de las telecomunicaciones. Cuarto informe Parte I Econometría S.A., julio de 2007, available at www.crcom.gov.co.

to calculate what the reaction of end users to lower roaming tariffs would be. As a matter of fact, the Commission eventually applied a Kaldor-Hicks cost-benefit analysis and justified the adoption of a double layer of regulation – at the wholesale and retail level – by showing that net benefits would be maximized under that option compared to all alternatives.

The Commission considered various policy options, from the *status quo* option to the adoption of the European Home Market Approach, Commissioner Reding’s initial preferred option, the regulation at wholesale level only, and the finally retained option (regulation at wholesale and retail level). Figure 6 below reports graphically the Commission’s conclusions for the retained policy options.

Figure 6 – net benefits of retail and wholesale capping (Billion Euros)



Source: Commission Impact Assessment, SEC (2006) 925, 12 July 2006

This properly done RIA, however, hides a specific problem, in that the description of “net benefits” portrayed by the European Commission was ignoring distributional effects. As a matter of fact, in Europe only 147 million users out of approximately 450 million European citizens were involved in the roaming market in 2006; 75% of those users (110 million) were business customers, whose bill was most likely paid by their employers; and the remaining 25% were mostly frequent leisure travelers and relatively wealthy consumers. The Commission acknowledged that “with many customers rarely or never consuming roaming services (66% of all mobile customers never roam according to A.T. Kearney), the welfare gains of high-frequency roamers would be substantial, as they would be able to reap the overwhelming part of the resulting changes in consumer surplus... Other things being equal, it is to be expected that business customers who currently are not on large-scale competitive contracts (as would be the case for most SMEs), high-frequency leisure travelers and people living in border regions would profit most from a reduction in roaming charges”³¹.

Looking at the results of the cost-benefit analysis, is the redistribution of income from firms to consumers going to be neutral from the standpoint of social welfare? And, even more importantly, are we sure that the change in consumer surplus does not hide income transfers between

³¹ Commission staff working paper - Impact assessment of policy options in relation to a commission proposal for a Regulation of the European Parliament and of the Council on roaming on public mobile networks within the community {COM(2006) 382 final} {SEC(2006) 926} /* SEC/2006/0925 */,
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2006:0925:FIN:EN:HTML>

consumers? The Commission seems to acknowledge this possibility in the RIA: *“To the extent that overall revenues of the mobile industry would come down as a result of regulation under some of the policy options, and to the extent that the revenue streams affected would be particularly high-margin ones, other things being equal it is reasonable to assume some reduction of investment It is reasonable to assume that while at the margin some rebalancing of tariffs will occur, a general increase in the price level for other services, given intense competition in major markets, is highly unlikely”*³². Accordingly, it is fair to state that, while drafting the RIA document, the Commission was aware of the following facts: (i) that the mobile sector was highly competitive; (ii) that regulating roaming would create some reduction of investment in this highly dynamic sector – a key sector for the competitiveness of the EU economy; and (iii) that even some rebalancing of tariffs, with a potential increase of domestic retail tariffs, could occur, but the intense competition between mobile operators would have kept such increase at a minimum. However, this consideration did not change the Commission’s final decision as to which policy option was to be preferred.

In this specific case, the European Commission did not take distributional issues into due account when crafting future policy interventions: and by providing a cost-benefit analysis which looks merely at a static vision of the “size of the pie” to judge whether a policy proposal must be considered preferable to alternatives, or not. Interestingly, the consultation run by the European Commission a few years after the enactment of the 2007 Roaming regulation led to a finding that was in line with the waterbed effect: operators were relying on revenues from retail SMS tariffs to partly compensate the lost revenues in voice.

After the implementation of the regulation, the European Commission has been monitoring developments in the roaming market carefully and in its Interim Report on the functioning of the Regulation, published June 2010, noted that competition was not strong enough. Another RIA performed in 2011 led to the decision to further lower wholesale and retail roaming tariffs. Finally, in 2013 the European Commission has proposed the abolition of roaming charges as of 2015, a proposal that has been endorsed by the European Parliament and awaits the final decision of the Council of the EU later this year. In the associated impact assessment (which considers a much broader set of actions, including the elimination of international roaming charges) the Commission calculates the losses that would accrue to the wireless sector, but then observes that given the (likely) high elasticity of demand, some of these losses would be mitigated by greater volumes of traffic, and accordingly higher revenues³³.

3.2.2 The Australian RIS on lot design for clearing the digital dividend

In April 2013, the Australian Communications and Media Authority (ACMA) ran the so-called “digital dividend” auction, aimed at reallocating two bands of spectrum (700 MHz and 2.5 GHz). The allocation instruments to be designed included an allocation determination and two marketing plans (one for each band) under section 39A of the Act, that specify, amongst other things, how the

³² Commission Staff Working Paper, Impact Assessment of policy options in relation to the commission's review of the functioning of Regulation (EC) no 544/2009 of the European Parliament and of the Council of 18 June 2009 on roaming on public mobile telephone networks within the community, available at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011SC0870&from=EN>.

³³ See the impact assessment on the proposal for a Connected Continent, SWD (2013) 331, at http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2013/swd_2013_0331_en.pdf

spectrum will be configured into lots for sale at auction. This is known as 'lot configuration'. A Regulatory Impact Statement was produced in support of this crucial decision.³⁴ The primary problem being addressed by ACMA in this RIA was how to configure the spectrum so as to promote its efficient allocation and use. In addressing this problem, the ACMA tried to ensure that the lot configuration would not limit or dictate market outcomes or hinder competition between auction participants. ACMA also had to consider the likely future uses of digital dividend spectrum.

ACMA identified three options for the configuration of the frequency bandwidth, namely 2x5 MHz lots, 2x10 MHz lots, and 2x15 MHz. Five options for configuring the geographic area were examined, ranging from national market area lots to disaggregated metropolitan, regional and remote market area lots. In considering the optimum lot configuration, ACMA took into account a wide range of technical, commercial and policy factors that were likely to affect the overall benefit to the community derived from reallocating the spectrum. In terms of lot configuration, a minimum frequency bandwidth of 2x5 MHz lots appeared to be ideal because it is consistent with international standards for LTE, and can be aggregated into 2x20 MHz licenses, which allows maximum spectral efficiency. It also allows the two bandwidths to be divided into equally sized lots, and promotes competition in the auction.

Generally speaking, geographic disaggregation was found to minimize the risk that spectrum in any single geographic region would lie idle. However, increased disaggregation also increases the chances that there may be utility loss zones in which no services can be provided. This occurs when different parties own spectrum licenses that share a boundary. Due to the propagation characteristics of the two bands, spectrum utility loss zones are likely to be far larger for the 700 MHz band than the 2.5 GHz band. Furthermore, the propagation characteristics of spectrum in the 2.5 GHz band lends itself to providing capacity in densely populated areas, while the 700 MHz band can be used to transmit signals over greater distances. This suggests that there would be benefit in geographic disaggregation for the 2.5 GHz band, while the 700 MHz band is better suited to providing national coverage.

ACMA undertook extensive public consultation on the issue of lot configuration, and has received a broad range of feedback from stakeholders. The majority of stakeholders preferred a national market area in the 700 MHz band, stating that the propagation characteristics of the spectrum allow for service coverage over large geographic areas. They also favored a national area because it accommodates the layout of a national mobile network. They favored minimum frequency lots of 2x5 MHz, stating that frequency lots smaller than this were inappropriate for the operation of either 3G or 4G technologies. Stakeholder views differed on the preferred lot configuration for the 2.5 GHz band. Some stakeholders expressed a preference for national lots, and others for disaggregated lots. There were also mixed views as to the most appropriate frequency bandwidth for the lots.

The options were compared through a multi-criteria analysis, which aimed at assessing the consistency of the various options with the technical characteristics of the band, as well as possible costs.

³⁴ <http://ris.dpmc.gov.au/files/2013/01/03-Lot-configuration-RIS.pdf>

Table 1 – Assessment of options for the Australian Digital Dividend Lot Configuration RIA

No	Option	Benefits		Costs	
		Fit with potential bidders' business plans	Subsequent allocations	Complexity	Technical inefficiencies
1	National lots (1 lot)	✓	✓	X	X
2	Aggregated metro and regional lots (2 lots)	✓	✓	X	X
3	Metropolitan regional and remote lots (11 lots)	✓✓✓	✓✓	XX	XX
4	State/territory based lots (8 lots)	✓✓	✓✓	XX	XX
5	Metro, regional and remote lots further disaggregated (15 lots)	✓✓✓	✓✓	XXX	XXX

Source: ACMA (2013), table 2

In addition, the possible bandwidth configuration within each plan was discussed: the three main options available (5MHz, 10MHz and 15MHz) are compared in table 3 below. As shown in the table, the criteria chosen for comparison are not in line with standard cost-benefit analysis, but are rather used to ensure the technical feasibility and the consistency of the configuration with specific policy goals, such as the promotion of competition in the auction and in related markets for services.

Table 2 – bandwidth configuration within each band

	2x5 MHz	2x10 MHz	2x15 MHz
700 MHz			
Consistent with the technical characteristics of the likely uses of the band?	✓✓✓	✓✓	✓✓
Do the lots sum equally to the total quantity of spectrum available?	✓✓✓	X	✓✓✓
Promotion of competition in the auction and in related markets for services?	✓✓✓	✓✓	✓
2.5 GHz			
Consistent with the technical characteristics of the likely uses of the band?	✓✓✓	✓✓	✓✓
Do the lots sum equally to the total quantity of spectrum available?	✓✓✓	✓✓✓	X
Promotion of competition in the auction and in related markets for services?	✓✓✓	✓✓	✓

Source: ACMA (2013), Table 3

The recommended options for the lot configuration in the 700 MHz and 2.5 GHz band were the following:

- A national geographic market for the 700 Mhz band and minimum frequency bandwidth of 2x5Mhz lots, which is expected to facilitate a competitive bidding environment, as the CCA will

provide bidders with the flexibility to package together lots to meet their specific spectrum requirements.

- Disaggregated metropolitan, regional and remote market areas for the 2.5 GHz band, including eight metropolitan areas, two regional areas and one remote area, with recommended frequency bandwidth of 2x5 MHz lots.

The combination of the regulatory impact analysis with the consultation of stakeholders ensured that this decision was fully shared with the market operators and oriented towards efficient outcomes.

The auction finally took place in May 2013 and three operators secured portions of spectrum in both bands³⁵.

3.2.3 Qatar's RIA on the Quality of Service for telecommunications

On March 6, 2014 the Communications Regulatory Authority (CRA) of Qatar issued two draft documents which aim at better regulating QoS in Qatar³⁶:

1. A QoS Policy which sets out the basis upon which the QoS offered by Service Providers will be measured and regulated by CRA. Its goal is to set policies, objectives and general principles to regulate QoS in Qatar.
2. A QoS Regulatory Framework which sets how CRA is going to regulate QoS offered by Service Providers. Its goal is to define Key Performance Indicators (KPIs), targets, measurements methods, reporting and publication procedures, validation and audit approaches and enforcement procedures.

These two documents, once adopted, are expected to significantly impact the telecommunications market in Qatar. As a consequence, CRA published a consultation document which includes a RIA (termed "Impact Assessment").

The main objective of the Qatari RIA is the analysis of the likely effect of the different regulatory options for each type of stakeholder. The policy options considered are the following:

- Option 1.** *Change nothing.* Under this option QoS is regulated as it is now .i.e with KPIs and targets listed in Service Providers' licenses around) 30 for fixed services and 6 for mobile services). Fines can be applied in theory in case targets are not met. However, they do not apply in practice.
- Option 2.** CRA's proposed option in the QoS Regulatory Framework whereby Service Providers must measure KPIs, must report the results of the measures and must meet imposed targets (if not, Service Providers have to pay defined penalties through Performance Bonds or compensate end-users).
- Option 3.** Similar to option 2, but Service Providers are not financially penalized when targets are not met. In practice, this approach is in fact the same as option 1 because in practice, in

³⁵ See <http://www.acma.gov.au/Industry/Spectrum/Digital-Dividend-700MHz-and-25Gz-Auction/Reallocation/digital-dividend-auction-results>.

³⁶ See <http://www.ictqatar.qa/en/documents/download/Annex%204%20-%20QoS%20impact%20assessment.pdf>.

the current situation, no penalties are applied. The only difference is the list of KPIs considered.

Option 4. “Remove all QoS atar, requirements”. However, given the low level of competition in Q this option is not considered as a realistic option for CRA and will therefore not be .considered in the rest of the document

Depending on the type of option undertaken, three types of costs might be incurred by Service Providers: the cost of measuring KPIs; the cost of reporting results of the measurements; and the cost of making improvements in their network to meet established targets or paying penalties if targets are not met. The CRA also calculates its own costs related to the monitoring of the future regulatory obligations. In light of the results of the RIA, CRA concludes that the estimated benefits expected from the QoS Regulatory Framework largely outweigh the estimated costs which should represent less than 5% of existing Service Provider revenues in the very worst case scenario (70% of targets not met, while CRA believes many of the targets being imposed would be met today). Option 3 is similar to Option 2, but would not provide sufficient incentives for Service Providers to improve QoS levels given the absence of penalties. The new QoS Regulatory Framework should increase QoS provided in Qatar but also provide much better information on QoS to end-users and therefore fill the gap between expected QoS and experienced QoS. This would also increase competition between Service Providers and provide Qatar with telecommunications infrastructure of very high standards. Table 4 below summarizes the impact on stakeholders as shown by the CRA.

The consultation closed on April 20, 2014. The results are being reviewed and will be incorporated in the elaboration of the final regulation, which is due later this year. The use of a preliminary impact assessment and extensive consultation ensure that the final decision to be adopted will be shared with the market operators: this also suggests that impact assessment, when coupled with consultation, ca increase the perceived legitimacy and quality of the rules that are being introduced by the regulator.

Table 3 – Costs and benefits of the proposed QoS regulatory framework in Qatar

	Option 1 – Change nothing		Option 2 – CRA’s proposed approach		Option 3 – CRA’s proposed approach without enforcement procedure when targets are not met	
	Estimated costs	Estimated benefits	Estimated costs	Estimated benefits	Estimated costs	Estimated benefits
Service Providers	No additional cost but bad understanding of QoS delivered to end-users and bad ability to compete	-	Minimum: QAR 2,810,000 if Service Providers’ network is at a level which is in line with requested targets Maximum: QAR 82,400,000 if Service Providers’ network requires improvements	Better understanding of QoS delivered to end-users Higher usage, i.e. higher revenues	Between QAR 2,810,000 and QAR 6,810,000	Better understanding of QoS delivered to end-users
CRA	No additional cost but objectives not achieved	-	Between QAR 2,420,000 and QAR 10,780,000 per annum depending on the number of independent studies needed	CRA’s statutory objectives will be achieved	Between QAR 2,420,000 and QAR 10,780,000 per annum depending on the number of independent studies	CRA’s objectives to increase investment and benefits to customers will not be fully achieved
End-users	Risk of insufficient level of QoS experienced Difficulty to assess QoS and to compare Service Providers	No risk of increase in prices	Between QAR 2,810,000 and QAR 82,400,000 per annum only if Service Providers pass on to customers cost increases. In this case, Service Providers impact must be reduced accordingly Otherwise 0.	Higher QoS or compensation if targets not met Better information to select a Service Provider Better information to understand areas where QoS is not good	Between QAR 2,810,000 and QAR 6,810,000 per annum only if Service Providers pass on to customers cost increases. In this case, Service Providers impact must be reduced accordingly Otherwise 0.	Better information to select a Service Provider Better information to understand areas where QoS is not good

Source: CRA, Impact Assessment in Relation to the Quality of Service Regulatory Framework, Consultation document, 6 March 2014, Annex 4, <http://www.ictqatar.qa/en/documents/download/Annex%204-%20QoS%20impact%20assessment.pdf>

3.3 Concluding remarks

This section has shown that RIA can be a very useful tool for ICT regulators wishing to adopt new rules that will have a significant impact on the market. The examples we have reported also show that RIA can help regulators in at least three ways:

- By enabling a more structured reflection on the available alternatives (e.g. in the EU Roaming Regulation case, the initial alternative turned out being inefficient, and was later discarded);
- By facilitating the debate between the regulator and stakeholder in the definition of the content of the rules to be adopted (e.g. in the case of Qatar, an earlier consultation had already been launched in 2013 to shape the main regulatory alternatives at stake);
- By increasing the perceived and actual legitimacy and quality of the final rules (e.g. the Australian digital dividend example led operators to gather full knowledge of why frequencies had been divided in 5Mhz lots, and why geographical areas had been selected in a different way between the 700 MHz and 2.5Ghz bands).

4 Introducing RIA in the ICT sector: a checklist for ICT regulators

4.1 Introducing RIA in the ICT sector

Based on what as discussed in the previous sections, in order to introduce successfully the RIA toolkit in the regulatory process of ICT regulators, the following elements have to be present:

- **A “holistic” approach to smart regulation**, which couples the use of RIA with the use of consultation, interim monitoring and ex post evaluation.
- **Appropriate governance arrangements (in particular, transparency)**: in the case of independent ICT regulators, independent scrutiny of RIA documents by an external oversight body may not be needed, provided that draft RIAs are subject to a sufficiently long consultation period and the ICT regulator motivates explicitly why certain comments submitted during the consultation were not taken into consideration in finalizing the proposal.
- **Building sufficient regulatory capacity in administrations**. Regulators in the ICT sector often have sufficient capacity to assess the impacts of proposed regulations; however, RIA requires a specific mindset, especially for what concerns the analysis of all direct and indirect impacts, as well as the analysis of the long-term impacts of policy decisions.
- **Sustained focus and political commitment**. Lack of momentum and sustained political commitment can kill regulatory reform in all sectors, including ICT. It is therefore important that ICT regulators confirm their commitment towards transparency and accountability through the regular use of tools such as RIA, consultation and ex post evaluation. Expectations should not be raised too high or too early, since the implementation of RIA might take time.

4.2 A checklist on how to perform individual RIAs

Below is a straightforward checklist to be followed by ICT regulators when approaching a RIA. The checklist is composed of the following questions (click on hyperlinks to go directly to the question).

Box 2: Summary regulatory checklist for RIA

Question 1.	What is the policy problem, if any?
Question 2.	Is the policy problem a market failure or a regulatory failure?
Question 3.	What are the main drivers of the policy problem?
Question 4.	Who is affected by the current situation?
Question 5.	What might happen if no policy action is undertaken?
Question 6.	What would happen under the “zero option”?
Question 7.	What alternatives would possibly address and solve the policy problem?
Question 8.	What direct costs are likely to be generated by the available alternatives?
Question 9.	What are the direct benefits expected from the various alternatives?
Question 10.	What are the likely indirect impacts of available alternatives?
Question 11.	What is the most appropriate criterion for comparing alternatives?
Question 12.	What are the major risks? Sensitivity analysis
Question 13.	How will the regulation be monitored and evaluated?

Question 1. What is the policy problem, if any?

Regulators in the ICT sector typically face a set of recurrent policy problems. It is important that the problem is classified as a market failure or a regulatory failure, and the main drivers of the problem are accurately highlighted. **Example: limited market competition is leading to too high prices and/or limited incentives to innovate or invest in new products.**

Question 2. Is the policy problem a market failure or a regulatory failure?

- A market failure (if yes, specify which type); - **example: monopoly power**
- A regulatory failure, (if yes, specify which type) – **example: insufficient copyright enforcement**

Question 3. What are the main drivers of the policy problem?

Example: very high market concentration is due to high barriers to entry, including very restrictive licensing conditions for market entry.

Question 4. Who is affected by the current situation?

Example: end consumers; investors; existing operators; potential new entrants.

Question 5. What might happen if no policy action is undertaken?

Example: consumers will be negatively affected since they will get higher prices and limited innovation/dynamic efficiency.(little incentives for operators to invest in network upgrades?)

Question 6. What would happen under the “zero option”?

You must remember to always include the “zero” option in the list of regulatory alternatives. The zero option corresponds to the baseline scenario: this means that it is not limited to a description of the status quo, but it incorporates a more forward-looking view of how the current situation would change absent regulatory intervention. In the ICT field, a typical question regulators should ask themselves is whether technology alone could solve the problem over time. For example, fixed-mobile substitution could partly solve the problem of limited consumer choice in the fixed-line market; enhanced use of Digital Rights Management has been considered as having the potential to partly solve the problem of online copyright infringement; the development of wireless broadband platforms powered by operating systems such as Apple iOS or Google Android is increasing the variety of competing products, for example in VoIP (e.g., Skype) or in instant messaging as an alternative to SMS (e.g. Whatsapp); finally, new technologies such as cognitive radio and mesh networks might solve the problem of scarcity (or sub-optimal use) of spectrum in the coming years.

Moreover, ICT markets often feature a breath-taking pace of change and the emergence of a particular kind of competition – what sometimes economists refer to as “Shumpeterian” competition. When this is the case, markets tend to be dominated by a one-generation leaders, which appear unbeatable but end up being quickly replaced by new market leaders. The combination of network externalities and technological advancements has led to the rise and fall of many leading businesses in the ICT ecosystem, from Lotus 123 to Altavista, Myspace, and to some extent even Microsoft Windows or Internet Explorer. A good understanding of the dynamics of ICT markets is therefore essential for ICT regulators, which should refrain from interfering with the ongoing process of “creative destruction” that characterizes many ICT markets.

In summary, regulators have to be aware of the constantly changing technological environment if they want to avoid making mistakes in their regulations. RIA provides the perfect platform for this reflection, especially if the regulator decides to consult stakeholders also on the relevance of technological development for the problem at hand.

Question 7. What alternatives would possibly address and solve the policy problem?

Alternative policy options can be identified by looking at a sliding scale that goes from the least restrictive form of intervention to the most heavy handed. Examples of alternatives that might be kept in mind by ICT regulators are the following:

- **Awareness-raising campaigns** are typically cheap to implement, but their effectiveness is often very partial. Simply increasing the amount of information available to end users does not mean that the latter will change their behavior. For example, a few years ago some governments tried to address the problem of online piracy by mandating that all movie theaters showed a video clip of a few minutes before projecting the movie, in which the criminal nature of copyright infringement through online piracy was explained in detail. The overall impact of the campaign was, however, very limited.
- **Self- and co-regulation** are often potential regulatory alternatives in the ICT ecosystem. This is due to the fact that the complexity and the very fast-changing nature of the ICT environment

often call for a joint intervention of the public authorities and the private players. For example, recent laws on net neutrality and on copyright infringement mandate that ISPs act as controllers of the behavior of their subscribers. Online advertising, child protection and privacy are still subject to a combination of general legislation and private standards in many parts of the world. The Internet itself, through ICANN and IETF, is subject mostly to private regulation. Table 5 below shows Chris Marsden’s “Beaufort scale” of the many hybrids that exist in the ICT ecosystem between pure self- and full-fledged co-regulation. As mentioned also in Cafaggi and Renda (2012), regulators could find it useful to break down the phases of the regulatory intervention (e.g. into agenda-setting, standard-setting, implementing acts, monitoring and evaluation, enforcement) and decide which phases would be more effectively dealt with by private actors, as opposed to others that should remain within the remit of public authorities.

Table 4 – Marsden’s “Beaufort scale” of self- and co-regulation³⁷

Scale	Regulatory scheme	Self-Co	Government involvement
0	'Pure' unenforced self-regulation	SecondLife	Informal interchange only – evolving partial industry forum building on players' own terms
1	Acknowledged self-regulation	ATVOD	Discussion, but no formal recognition/approval
2	Post-facto standardised self-regulation	W3C#	Later approval of standards
3	Standardised self-regulation	IETF	Formal approval of standards
4	Discussed self-regulation	IMCB	Prior principled informal discussion, but no sanction/approval/process audit
5	Recognised self-regulation	ISPA	Recognition of body – informal policy role
6	Co-founded self-regulation	FOSI#	Prior negotiation of body – no outcome role
7	Sanctioned self-regulation	PEGI# Euro mobile	Recognition of body – formal policy role (contact committee/process)
8	Approved self-regulation	Hotline#	Prior principled less formal discussion with government –with recognition/approval
9	Approved compulsory co-regulation	KJM# ICANN	Prior principled discussion with government – with sanction/approval/process audit
10	Scrutinised co-regulation	NICAM#	As 9, with annual budget/process approval
11	Independent body (with stakeholder forum)	ICSTIS#	Government imposed and co-regulated with taxation/compulsory levy

Note: # denotes 'soft power' of government/EC funding.

Source: Chris Marsden.

³⁷ ATVOD is the Authority for Television On Demand; W3C is the World-Wide-Web consortium; IETF standard for Internet Engineering Task Force; IMCB is the Internet Mobile Classification Board; ISPA is the Internet Service Providers Association; FOSI is the Family Online Safety Institute, whereas PEGI stands for Pan European game Information. KJM is the German Commission for youth protection on the media. ICANN is the Internet Corporation for Assigned Names and Numbering. NICAM is the Netherlands Institute for the Classification of Audio-visual Media. Finally, ICSTIS stands for Independent Committee for the Supervision of Standards of the Telephone Information Service (no renamed PhonepayPlus).

- **Transparency requirements** are often very useful for end users, especially when the policy problem (or one of its drivers) is partly due to an informational asymmetry between the service provider and the end user; when this is the case, however, the behavioral consequences of providing more information to end users have to be carefully taken into account. For example, in 2009 the EU Directive on Universal Service Obligations in electronic communications was amended to introduce a new rule (Article 20), which mandated that Internet Service Providers had to provide information to their subscribers as regards traffic management or blocking/throttling practices they engaged into on their networks. However, no mention was made of the way in which this information had to be provided: this significantly weakened the impact of the provision, since absent a standardized, user-friendly way to convey this information to the non-specialized end users, there was no guarantee that users would fully understand the meaning and consequences of these technical practices.
- **Use of market-based mechanisms.** Market-based mechanisms encompass a family of potential ways to let the market reallocate property rights. For example, the facilitation of secondary trading for spectrum has been advocated by academics since Ronald Coase (1959) and has been subject to several applications around the world. The use of auctions to reallocate rights, especially in spectrum policy, is now a consolidated practice that is being significantly improved with innovative auction designs (think about “incentive auctions” in the US). The international experience and the law and economics literature so far suggest that whenever transaction costs are not prohibitively high, regulators should consider adopting rules that facilitate market exchange between operators, in order to delegate the decision on the most efficient distribution of rights to market forces. However, the role of hold-up behavior, strategic conduct and exercise of market power should not be underestimated: for example, in the case of spectrum trading it is fair to state that most often powerful players would tend to hoard spectrum and not release it in favor of potential future competitors, rather than engaging in commercial negotiations.
- **Standardization and interoperability.** Whenever the policy problem at hand is the insufficient development of a given market due to the lack of commonly agreed standards, the regulator might consider actions aimed at setting a public standard and inviting private operators to adhere to it. In some cases this could prove a winning strategy: for example, there is widespread agreement that Europe’s decision to select the GSM standard as the mandatory standard for 2G phones and to select a single spectrum band (900 MHz) for its use was a successful one; however, in many circumstances a top-down approach to the selection of standards can have a strait-jacket effect on the market, which normally can select the *de facto* industry standard more efficiently in a bottom-up way. Similarly, in some circumstances a lack of interoperability between platforms (e.g. in emerging cloud platforms, which might not ensure the portability of data) might call for public intervention: however, forcing interoperability too early in the development of a high-tech market might lead to a risk of “technological lock-in”. So-called “open access” remedies, which require that owners of a network or an essential asset have to provide access to market operators, often at fair and non-discriminatory prices, typically belong to this family of regulatory alternatives.
- **Behavioral remedies** imply the prohibition of certain market behavior, and may also not include the setting of regulated prices. For example, mandatory net neutrality obligations are non-price (or, some would say, a zero-price) regulations that mandate non-discriminatory treatment of all Internet traffic, normally with some exception (e.g. spam filtering). Likewise, obligations to grant access to MVNOs, which may or may not be coupled with regulated prices, amount to a behavioral remedy that alters the market structure by promoting the entry of non-infrastructure operators in the wireless telecommunications market. Other access obligations that are

sometimes not coupled with price regulation include wholesale fixed-line broadband access, especially if one looks at the current practice of virtual unbundled local access product (VULA) by Ofcom, the UK regulator. VULA is an electronic means to provide virtual, bitstream-type access that is similar to local physical access (i.e. physical unbundling of fiber or copper local loops and access to ducts), but is currently not coupled with price regulation.

Typically, an important distinction that regulators must make is that between symmetric and asymmetric regulatory remedies, in particular for what concerns behavioral (and other, more intrusive) remedies. The decision to impose a certain remedy only on companies with significant market power and not to others must be made in a way that is consistent with the fundamentals of competition law, and also with due attention to the creation of a real level-playing field in the relevant market.

- **Price regulation** normally follows behavioral remedies, but strengthens them by replacing the outcome of commercial negotiations with an amount chosen by a regulator. Access policy obligations imposed in many countries around the world on incumbent operators typically imply a price set by the regulator based on a specific formula (e.g., the TELRIC or the TSLRIC formulas used to price access to various points of the fixed-line network). Similarly, wholesale access to wireless networks can be coupled with prices regulation. The decision to impose price regulation instead of leaving it to the operators to set their price in commercial negotiations should be taken only when transaction costs are so high that it is unlikely that commercial negotiations would be concluded successfully and at a mutually favorable price.
- **Structural remedies.** These include the functional or structural separation of the network from the associated services. Countries like the UK have decided to impose this remedy early on by functionally separating British Telecom's network from the company's retail operations. Generally speaking, the imposition of structural remedies like functional or structural separation should be considered when there is evidence that less intrusive remedies such as access obligations have failed, for example due to the fact that the incumbent engaged in successful non-price discrimination.

In considering alternative policy options, the following criteria should always be kept in mind by the regulator:

- **Think outside the box:** options should not necessarily replicate what is already existing in your or in other countries. Rather, they can also be imagined by the regulator, e.g. based on input received from experts, and subject to the criteria identified below (effectiveness, efficiency, proportionality, coherence). Also, remember that some of the options listed above can be combined.
 - **Effectiveness.** In order to represent a feasible regulatory alternative, the option at hand should be feasible to implement and also effective in addressing the policy problem identified. This implies also that if an option would likely face massive non-compliance behavior and limited or no possibility to monitor compliance, it should be discarded at an early stage.
 - **Efficiency.** Especially when it comes to regulatory options in the telecommunications world, efficiency is a key element for a pre-screening of the feasible alternatives. If you believe a given option will be too costly to be implemented, especially if benefits are not significant, you should discard that option at an early stage to avoid wasting resources.
 - **Proportionality.** An option should not be disproportionate: this implies that the means should be always proportionate to the goal of the regulatory intervention. A corollary of this principle is
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that, if regulators find out that, compared to the remedy at hand, a less intrusive option would achieve the same result, then only the latter should be included in the options to be compared.

- **Coherence.** An important aspect of the feasibility of the options to be compared is their consistency with the overall regulatory framework in place. Check for consistency and policy coherence before including a possible option in the array of the regulatory alternatives to be compared.

Once regulators have selected the alternative options to be compared, the time is ripe to consult targeted stakeholders on the potential impacts of each of the options. Regulators should compile a document containing a draft RIA and the associated proposal, and formulate clear questions as regards:

- The policy problem identified (“Do you agree with the definition of the policy problem, as well as its drivers?”)
- The exhaustive nature of the alternative options selected (“Are there alternatives that have been discarded, which would successfully address the policy problem identified?”)
- The possible direct and indirect impacts generated by the alternatives (“which of the following impacts will emerge as a result of the implementation of Option X?”)
- The data and information that the administration should use to measure such impacts (by providing stakeholders with a list of sources and references and asking them to add those sources that they consider important and are missing from the list).

Increasingly, regulators around the world give themselves minimum standards for consultation. In the EU and the UK, the minimum standard is 12 weeks. In many other parts of the world the length is shorter but normally above four weeks³⁸.

Question 8. What direct costs are likely to be generated by the available alternatives?

In order to answer this question, the regulator has to consider the various categories of direct cost as illustrated in figure 4 above. This implies the monetization of the following costs:

- **Direct charges:** in the ICT sector, these mostly take the form of fees or royalties. For example, license fees or spectrum fees, QoS fees, copyright royalties, blanket licence fees. Monetizing these charges is normally easy: the most difficult part of the calculation is the determination of the population of stakeholders (business or individual consumers) that will have the obligation to pay the charge, and the likely compliance rate.
- **Administrative burdens:** these can be estimated following the Standard Cost Model or a similar method. This normally requires an analysis of the information obligations introduced by the new regulatory intervention, the type and amount of data to be produced, the time needed to collect and deliver these data, the average hourly salary of the individual(s) that will carry out the activity for a normally efficient firm, plus any acquisition such as the purchasing of equipment or the contracting of an external counsel for the performance of the activity. Monetizing these data

³⁸ See for the UK, the Code of Practice on Consultation issued in 2008, at <http://www.bis.gov.uk/files/file47158.pdf>. In the EU, the Commission consults in a variety of ways on the basis of minimum standards which have been in place since 2002 (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2002:0704:FIN:en:PDF>). In order to further improve the consultation process, the Commission decided to increase the public consultation period from 8 to 12 weeks as of 2012.

might require the use of empirical techniques such as telephone or face-to-face interviews, focus groups, etc.

- **Substantive compliance costs:** similarly to administrative burdens, these costs – which are normally the bulk of direct costs – can be monetized starting from the types of activities to be performed as a result of new obligations introduced by the various regulatory alternatives, determining the population of firms or consumers that will be subject to the obligation and calculating the cost of compliance per firm. Substantive compliance costs can include *i.a.* investing in new equipment, training personnel or hiring new employees, modify the production process, etc. Calculating compliance costs may require a monetization of both capital costs and operating expenses (CAPEX and OPEX).
- In addition, it is important that regulators compare alternatives in terms of their **enforcement costs**. For example, in deciding over net neutrality the enforcement costs of monitoring QoS over the network might be very high, whereas the option not to monitor might lead to much lower enforcement costs. This does not mean that the former alternative is worse than the latter: all relevant costs must be summed up and compared with benefits before a decision on the preferred option can be made. To account for enforcement costs, regulators should first assess how the various regulatory alternatives will be enforced. This means considering all modes of enforcement where appropriate, ranging from private enforcement in courts (and associated likelihood of settlement before trial); public enforcement by administrative or independent authorities; alternative dispute resolution mechanisms such as ombudsmen, complaint handling mechanisms set up by private regulators, etc. Moreover, regulators must assess costs associated with monitoring and inspections and the likely changes in the quantity and duration of litigation. This means anticipating, where relevant and proportionate, the additional costs that certain regulatory alternatives might generate in terms of additional court cases and additional out-of-court settlements for public administrations as well as private parties such as citizens and businesses. The sum of all incremental costs related to enforcement activities will lead to an estimate of the total enforcement costs for each alternative.

Total direct costs are the result of compliance costs (charges, substantive compliance costs, administrative burdens), hassle/irritation costs where applicable, and enforcement costs. Although not necessary, it is advisable that regulators present them in a disaggregated way, distinguishing between affected stakeholders. In addition, it is essential that total direct costs are presented for each of the policy options under scrutiny.

Question 9. What are the direct benefits expected from the various alternatives?

As shown in figure 4 above, direct benefits include cost savings, improvements of market efficiency and improvements in well-being. For what concerns cost savings, the methods to be used are essentially the same mentioned above for the monetization of costs.

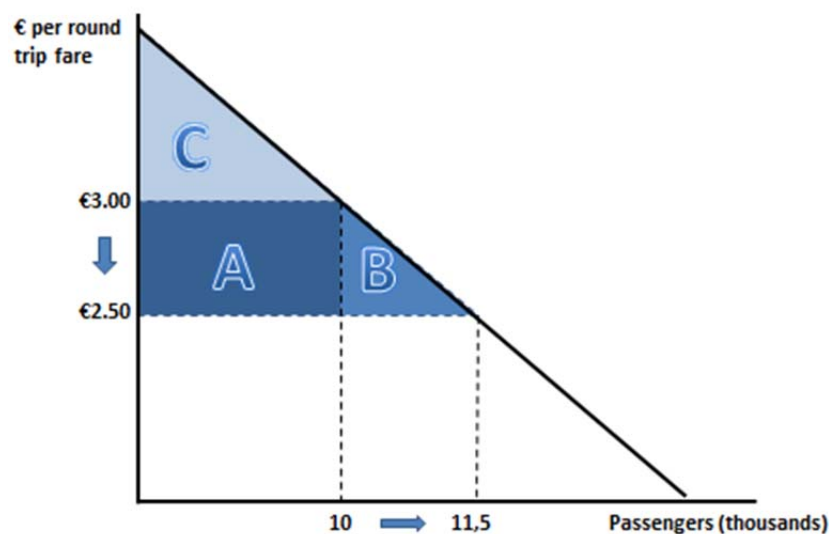
As regards market efficiency, the three most important variables that must be taken into account are:

- **Consumer surplus**, *i.e.* is the extent to which consumers gain from the possibility to buy the product: it is also measured as the difference between what consumers would have been willing to pay to buy a certain good, and what they actually pay (*i.e.* the market price). Consumer surplus and price are inversely related – all else equal, a higher price reduces consumer surplus.
-

- **Producer surplus**, which measures what sellers gain out of the sale of a given product, and represents the difference between the actual price and the minimum acceptable price for the producer. Graphically, this area is the area above the supply curve, and below the price level.
- **Deadweight loss**, *i.e.* this is the part that regulators should be mostly concerned about: if markets do not work efficiently, the output produced might be less than optimal, due to the fact that prices are too high above cost, and some consumers (who value the good at hand more than the cost of producing it) find the good too costly to buy. The value that would have been created by an efficient market can be represented as the consumer surplus that would be generated, were the market at hand functioning more efficiently.

Figure 7 below shows an example taken from the Australian cost-benefit analysis handbook, which assumes the entry of a more efficient bus line in a given market, which brings down prices from €3 to €2.50. The decrease in price leads to an increase in output (1,500 additional passengers now have access to the market). The overall effect is that old passengers gain (area A), and new consumer welfare is created (area B). This adds to the consumer surplus already enjoyed by old passengers (area C).

Figure 7 – Net benefits from enhanced market efficiency



Source: Australian government Cost-Benefit Analysis handbook

In the specific case of ICT, the analysis above might however be too narrow. Of particular importance in this sector are impacts on **dynamic efficiency**, *i.e.* the ability of a market to generate innovation over time. In this respect, it must be recalled that the economic theory is still split over the market structure that is most conducive to innovation and investment over time³⁹. However, regulator must

³⁹ The relationship between competition and innovation is among the most researched issues in economics, especially due to the long-lasting debate between two of the most prominent economists of the past century, Joseph Schumpeter and Kenneth Arrow, who had completely opposite views of the best market conditions that would contribute to stimulating innovation. More recently, the work of Philippe Aghion and various co-authors has shed more light on the potentially beneficial impact of

consider the potential for different regulatory options to stimulate investment in infrastructure and in new services.

For what concerns **improvements in the social and economic condition as well as in health, safety and the environment**, these would be often very difficult to estimate for an ICT regulator, but are also likely to play a less essential role than in other areas of regulation. As explained above, both stated preference and revealed preference techniques can be used to monetize impacts. Recent studies have shown increases in the levels of individual satisfaction associated with broadband penetration: for example, in their study on 29 (mostly European) countries, Kavetsos and Koutroumpis (2011) find that a 10% increase in broadband penetration produces the same lift in the population's subjective well-being as a 2.89% increase in GDP per capita⁴⁰. The UK Broadband Impact Study (2013) drafted by SQW for the UK Department of Culture also summarizes the main economic, social and environmental impacts of broadband penetration in the UK⁴¹.

Question 10. What are the likely indirect impacts of available alternatives?

Most of indirect impacts are difficult to monetize. That said, regulators should do their best to answer the following questions:

- **Does any of the alternative policy options create indirect compliance costs (“a negative externality”)?** This occurs whenever direct compliance costs imposed by the alternative option at hand would lead to restrictions of output, higher downstream prices or any other additional cost for economic agents other than those targeted by the regulation;
- **Does any of the alternative policy options lead to substitution effects?** In particular, would citizens or businesses other than the regulated entities shift to alternative sources of supply, or alternative modes of consumption? If this is the case, you should try to monetize those benefits by estimating the opportunity cost of the induced behaviour, i.e. the value or surplus foregone by those individuals or businesses that have been induced to engage in the substitute behaviour.
- **Does any of the alternative policy options lead to increased transaction costs?** Transaction costs normally include the cost of negotiations between parties, e.g. to adopt collective decisions; the cost of information gathering for private parties; the cost of looking for a contractual counter-party; the likelihood of strategic behaviour between private parties; the cost of monitoring a counterparty's behaviour;

competition on innovation and growth. Also, the work of David Teece (1986) has shed a different light on the dynamics of innovation. Rather than adopting a “market structure” approach, like Schumpeter, Arrow and Aghion, Teece considers that most innovative products have to be integrated in a nexus of complementary products to really unleash their full potential. Thus the modularity of modern products and the possibility of integrating innovation into existing system goods becomes one of the essential drivers of product innovation in a given economy.

⁴⁰ Kavetsos, Georgios & Koutroumpis, Pantelis, 2011. "Technological affluence and subjective well-being," *Journal of Economic Psychology*, Elsevier, vol. 32(5), pages 742-753.

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[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/257006/UK Broadband and Impact Study - Impact Report - Nov 2013 - Final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/257006/UK_Broadband_and_Impact_Study_-_Impact_Report_-_Nov_2013_-_Final.pdf). See also the literature review at [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85960/UK Broadband Impact Study.docx](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85960/UK_Broadband_Impact_Study.docx).

- **Does any of the alternative policy options lead to a reduction of competition?** More specifically, you have to answer the following questions:
 - Would any of the alternative options make it more difficult for new businesses to enter the market at hand?
 - Would any of the alternative options prevent firms from competing aggressively in the relevant market?
 - Would any of the alternative options make it more likely that firms collude in the relevant market, to the detriment of consumers?

In all those cases, a monetary value needs to be attached to the likely loss of consumer surplus due to reduced competition. This is inevitably a case-by-case exercise. An example of this is the recent “practical guide” adopted by the European Commission on estimating damages in antitrust cases.

- **Does any of the alternative policy options lead to reduced market access?** A way to assess this indirect cost would be to estimate the lost consumer surplus (for individual consumers), or the lost profit (for businesses) that would occur due to the impossibility to gain access to a given market due to regulatory restrictions or to costs imposed by the regulation on upstream market players.
- **Does any of the alternative policy options lead to reduced investment or innovation?** Common indicators are the level of investment in telecommunications infrastructure, the number of patents produced, the volume of R&D investment, the amount of technology transfer etc.

For what concerns indirect benefits, it is important to assess the differences between policy options at least for what concerns wider macroeconomic benefits. In this respect, regulators can refer to the significant amount of economic literature that demonstrates the relationship between ICT penetration and macroeconomic variable such as GDP. According to recent estimates, a 10% increase in broadband penetration yields an additional 1.21% of GDP growth in high income countries, which rises to 1.38% in low and middle income countries. Similarly, doubling the broadband speed was found to increase an economy’s GDP by 0.3% (Qiang and Rossotto 2009 Bohlin et al. 2012)⁴².

Question 11. What is the most appropriate criterion for comparing alternatives?

Once information on regulatory alternatives and their potential direct and indirect impacts has been collected, the regulator must process it in a way that is consistent with the ultimate objectives of the regulatory intervention. In most circumstances, cost-benefit analysis will be an appropriate methodology, which will directly point at the most efficient alternative. However, there are cases in which regulators should evaluate the available alternatives in terms of their ability to guarantee specific outcomes or public policy targets. For example, universal access is often a specific policy goal that might, under certain circumstances, conflict with efficiency; social justice, safety, fairness and non-discrimination what also can lead to a similar trade-off. Against this background, it is of utmost importance that the regulator explicitly makes a choice as to which method to use. If no policy goals that are potentially at odds with efficiency are involved, then cost-benefit analysis will certainly be a useful method to reach a meaningful decision; to the contrary, when potentially conflicting issues

⁴² Again, the literature review completed for the UK Department of Culture by SQW in 2013 is a useful reference on economic impacts of broadband.

are at stake, multi-criteria analysis will be recommended. Again, whatever the choice, the regulator has to motivate it in a transparent and convincing way.

In case the regulator wishes to perform a cost-benefit analysis, it is essential that the “net present value” of available alternatives is calculated. This requires the choice of an inter-temporal discount rate. The reason is straightforward: regulators will often need to compare alternatives that produce costs and benefits at different moments in time. An option that generates, say, USD50 million of benefits tomorrow cannot be considered equivalent to an option that generates the same amount of benefits, but only in ten years from now. To make costs and benefits comparable, a discount rate should be applied to future cash flows, in order to represent their value today.

If the discount rate were constant at ‘r’ per cent per year, a benefit of ‘B_t’ received in ‘t’ years is worth $B_t/(1+r)^t$ now. Similarly, a cost of ‘C_t’ received in ‘t’ years is worth $C_t/(1+r)^t$ today. If you assume the discount rate remains constant over the years, the formula for calculating the value of the difference between benefits and costs today (the so-called “net present value”, NPV) becomes the following:

$$\sum_{t=0}^T NPV = (B_t - C_t)/(1+r)^t$$

Discount rates used around the world can change significantly. In the EU the current Impact Assessment Guidelines recommend a “default” discount rate of 4%⁴³; in contrast, the value of 7% is chosen in Australia and the United States, with sensitivity analyses being mandate for different values (3% and 10% in the US)⁴⁴.

Question 12. What are the major risks? Sensitivity analysis

Once the preferred policy option has been selected through an appropriate method, it is important that the regulator performs a sensitivity analysis to ensure that the result is sufficiently robust. This implies a number of possible tests, such as the following:

- **Change the discount rate.** As explained above, you should perform a sensitivity analysis by using different discount rates in your calculation of the net present value. If, even with discount rates of 2% and 6-7%, the preferred policy option remains the same, this indicates robustness of the results.
- **Check for typical pitfalls in cost-benefit analysis.** In particular, certain mistakes should be avoided, such as “double counting”, confusing the baseline with the status quo and using an inconsistent base currency.
- **Perform sensitivity analysis on key variables.** The variables that should be allowed to vary to test the robustness of the final data should be linked to the drivers of the problem identified in the problem definition. Possible ways to approach the problem of sensitivity analysis are:

⁴³ See Commission Impact Assessment Guidelines, SEC (2009) 92, at http://ec.europa.eu/smart-regulation/impact/commission_guidelines/docs/iag_2009_en.pdf.

⁴⁴ Commonwealth of Australia, Department of Finance and Administration, 2006, Handbook of Cost-Benefit Analysis, Financial Management Reference Material no. 6. And US Guide to Cost-Benefit Analysis developed by the Office of Information and Regulatory Affairs, Circular A-4, available online at http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf

- *Worst/best case scenario analysis*: this requires adopting all the most conservative and all the least conservative values for variables used in the calculation of the NPV, and showing a lower bound estimate and an upper bound estimate for the resulting NPVs for each option.
- *Partial sensitivity analysis* (i.e. changing only some of the assumptions, but not other) should be selectively used, for those key risk factors and underlying assumptions that are expected to tilt the balance in favor of one policy option. This is often the case of variables such as the compliance rate, the evolution of consumer demand, etc.
- *Monte Carlo sensitivity analysis* is a more sophisticated technique that entails the creation of a distribution of net benefits by drawing key assumptions or parameter values from a probability distribution. While this is a more robust approach to sensitivity analysis, care needs to be taken in adopting reasonable and justified assumptions about the probability distributions which have been assumed. This type of analysis normally takes the form of a random sampling process to approximate the expected values and the variability inherent in the assumptions which are expressed as probability distributions for the most sensitive and uncertain parameters (risk variables). It is a computer-aided methodology through which many possible project scenarios are generated through a random selection of input values from the specified probability distributions.

If the robustness of your basic assumptions cannot be examined numerically, a qualitative discussion on the appropriateness of each assumption can help readers to gauge the reliability of the results. The outcome of the sensitivity analysis should not be presented as a true, holistic measure of the uncertainty in the results, since there will be many assumptions that are not examined in the sensitivity analysis. Therefore the numerical results of the sensitivity analysis should be presented side-by-side with a discussion of the underlying assumptions that cannot be numerically examined.

- **Assess the likelihood and patterns of compliance.** This implies a reflection on the following effects.
 - *Lack of deterrence, lack of compliance.* The choice to comply with a legal rule can be framed as a rational process. Individuals or businesses that are targeted by a legal rule might decide not to comply with it if the cost of compliance is greater than the likelihood of being prosecuted for having infringed the legal rule at hand. Accordingly, the more difficult it is for enforcers to track non-compliance, the lower the sanction, the less effective the work of enforcers and inspectors, and the greater the benefit from non-compliance, the more likely it will be that the compliance rate will be lower than 100%. This is particularly relevant for all those methods that assume 100% compliance rates, such as the Standard Cost Model.
 - *Behavioural responses to legal rules.* Beyond rational non-compliance, the effectiveness of a given policy alternative might be negatively affected by cognitive effects. The assessment of costs and benefits might be distorted if RIA fails to account for possible behavioral responses by individuals. These include cognitive problems (over-optimism, excess risk aversion, and more generally bounded rationality and rational ignorance); and offsetting behaviour (e.g. individuals drive faster if they have safer cars, such as cars equipped with airbags and electronic stability systems, such that the additional safety benefits expected from this equipment is compensated by the higher speed). If you are comparing “passive safety” measures (which do not require actions by the driver) and
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“active safety” measures (which depend on the driver’s behaviour), the existence of offsetting behavior can tilt the balance in favour of the former.

Question 13. How will the regulation be monitored and evaluated?

Finally, it is important that ICT regulators define in advance the main indicators that will be used overtime to monitor the performance of the adopted regulation, and an adequate time horizon for the evaluation of the regulation and possible need for reform. Indicators have to be unambiguous and verifiable to the extent possible: examples include retail price levels for broadband (at defined speed); level of broadband uptake; broadband penetration per household passed; entry of new players in the market; data usage per individual broadband subscriber; and many others⁴⁵.

5 Conclusions and lessons learned

Our brief “helicopter view” of the main benefits and challenges of implementing RIA in policymaking in the ICT sector, coupled with national experience from several countries, leads to the following main lessons learnt.

First, **there is no one-size-fits-all RIA model that is valid under every sky**. Depending on the institutional setting, the sector of application, the type of legal rules subject to RIA, the most appropriate set of methods and procedure changes.

Second, **RIA is neither a panacea, nor an exercise in rocket science**. RIA provides benefits when it is used with due care, and especially when it is coupled with a broader regulatory reform strategy, with a holistic approach to the policy cycle, and with sufficient guidance on when, and how, to use methods such as cost-benefit analysis.

Third, **the main benefits of RIA come after some time, and thus requires sustained political commitment**. It is very important not to raise expectations too high from the beginning, as the first experiments with RIA might be disappointing, and it will take a while before administrations learn how to draft good RIAs.

Fourth, RIA can significantly contribute to the **efficiency, transparency, accountability and coherence** of public policymaking.

Fifth, **the choice of the methods to be used in a RIA depends on the types of impacts to be assessed and also on the long-term policy goals set by government**. In particular, when a proposal is likely to have important indirect impacts, general equilibrium models can prove superior to partial equilibrium ones; in addition, when the proposal at hand is likely to have significant distributional impacts, CBA may not be the most appropriate choice and multi-criteria analysis, especially if related to the achievement of long-term goals, can be the preferred choice. And when governments introduce RIA in a way that is functional to objectives other than efficiency, the methods and the criteria used to compare alternative options have to be consistent with these objectives.

Sixth, **governance is of the essence** when it comes to designing a RIA system. The essential traits of a well-designed RIA system are the existence of a strong regulatory oversight body, reliable legislative

⁴⁵ For an in-depth discussion on monitoring policy implementation, check the GSR14 Discussion Paper on Monitoring the implementation of Broadband Plans and Strategies, www.itu.int/gsr14.

planning in the administration, adequate skills and a results-oriented mindset in the administration, and strong involvement of external stakeholders during the main phases of the policy cycle.

Seventh, **RIA can be usefully applied in the ICT sector**, especially due to the fact that regulators normally possess technical and economic expertise, and can easily consult stakeholders given the sectoral nature of the regulation. At the same time, RIA provides a useful platform for discussing the short- and long-term impacts of regulation, especially when it comes to the trade-offs that regulators often face between static and dynamic efficiency (often in the form of promoting entry of new players v. stimulating investment in infrastructure), and between efficiency as a whole and other goals (universal access, non-discrimination, interoperability, open access, resilience, etc.).

Finally, **it is recommended that ICT regulator use RIA through a multi-criteria analysis**, which implies that regulators make all attempts to quantify and monetize the direct and indirect impacts of regulation, and scrutinize available alternatives also on the basis of additional screens, which enhance policy coherence with the regulator's own long-term agenda.