International Transport Forum

Assessing Regulatory Changes in the Transport Sector

An introduction

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International Transport Forum, Paris, France

OECD

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Acknowledgements

Abstract

The specific characteristics of transport services and markets, including their importance in socio-economic terms, are such that Regulatory Impact Analysis (RIA) is particularly likely to yield major benefits when applied to transport policy. However RIA in transport is not as widespread as in other sectors given the presence of some major barriers.

This paper explains the aspects of a good practice RIA system for transport regulations. It describes the rationale and the benefits of RIA frameworks and provides advice on dealing with the practical realities of implementing RIA in the transport sector. It concludes with recommendations for governments seeking to implement RIA within their jurisdictions.

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Regulatory Impact Analysis for better regulation

Coherent and effective policy and regulations require the use of frameworks based on evidence and analysis (OECD 2009, p. 11). Contemporary regulation requires decision makers to navigate a myriad of complexities, uncertainty and rapid societal change to determine where the public interest lies and what regulatory action, if any, is appropriate. To do this, they rely on advice and evidence. In turn, quality advice arises from robust analytical processes that are integrated with the policy making apparatus at all stages of the process. Without such a foundation in evidence and analysis, it is unlikely that decision makers will be able to effectively weigh different options and make regulations that maximise the benefit to society. In turn, regulatory action would be sub-optimal, at best, or counter-productive.

Regulatory impact analysis (RIA) is a tool to ensure policy coherence and effectiveness. It expands the range of information available to decision makers to help them make better decisions and presents it in a consistent format. By gathering evidence, exploring assumptions and systematically identifying and assessing expected impacts, RIA aims to give policy makers insight into the nature of policy problems and the real world impact of potential responses. Policy makers can use this information, combining it with political considerations and their own judgment, to choose policy options that are expected to provide the greatest net benefit to society as a whole (OECD 2002, p. 45; OECD 1997, p. 7; OECD 2009, p. 13; World Bank 2010, p. 7).

In addition to coherence and effectiveness, the most recurring motivations for assessing regulatory changes in a systematic way under an RIA framework are efficiency, equity, transparency, accountability and control over government agencies. These factors contribute to better designed public policies and limit bias towards short-term interest.

RIA can increase transparency and accountability by requiring policy-makers to present the rationale for their regulatory and policy decisions in a clear, logical and objective manner. Moreover, greater transparency at the early stages of the policy cycle will make stakeholder involvement more effective in identifying problems with the analysis and other potential policy options. Continued scrutiny of the performance of policy interventions over time, including their coherence, contributes to strengthening the accountability of policy-makers.

Well-executed RIA also ensures that long-term policy objectives are explicitly incorporated in decision-making. The RIA process facilitates the identification of both the underlying policy problem and interventions focused on addressing that problem (World Bank, 2010, p.6). Aligning sectoral, local and national strategies can be an added benefit of RIA. Experience in the US shows that RIA equips central government with a tool to more effectively oversee the work of specialised agencies, without the need to acquire the same degree of detailed knowledge as their agents (Posner, 2001). The same can be said about coordination between central government and local/regional authorities.

These benefits of RIA may be particularly important in the transport sector, which is characterised by long investment cycles and relatively slow replacement rates for both vehicles and infrastructure, implying a need for particularly careful policy analysis prior to implementation and an acute need for high levels of acceptance of regulatory initiatives – once imposed, costs tend to be sunk. The transport sector is also characterised by the need for a range of government agencies to co-operate to align policies and regulations to achieve long-term goals such as accessibility, service delivery, safety and environmental quality. Effective coordination, facilitated by good RIA, is therefore crucial.

The two main fields of ex-ante analysis for decisions in the transport sector today are Cost-Benefit Analysis (CBA) to assess the socio-economic return of investment in infrastructure projects, and competition analysis in the case of proposed mergers and potential abuse of monopoly power. Both types

of analysis can offer valuable insights to the process of RIA. In particular, CBA is a well-developed methodology that can be used to monetise the effects of regulation on economic efficiency, an important component of social welfare. However, transposing CBA to promote (as well as resist) regulations is most effective when a step-by-step approach to RIA is adopted, of which CBA is only one of the key components.

Irrespective of the analytical methods used, RIA can assist to avoid the implementation of poorly designed regulations, even when it is not particularly complicated. For example, in 2012, Australia enacted the Road Safety Remuneration Act. This proved to be an example showing the potential shortcomings of ill-designed RIAs (Deighton-Smith, 2016). The Act aimed to alleviate a stagnation in annual fatalities involving articulated trucks. Allegedly, there was a correlation between drivers' remuneration and unsafe driving behaviours. To address the issue, the Act established a quasi-judicial tribunal with price setting powers in relation to minimum road freight rates. While RIA was conducted in conjunction with the introduction of the Act, a subsequent review revealed a number of deficiencies. First, the Regulatory Impact Statement assessing the effects of the proposed legislation was only drafted a year after the political decision to introduce minimum rates was made. Secondly, the technical quality of the RIA was low. There was, at best, limited evidence of stagnation in annual fatalities or the existence of a link between remuneration and safety. Also, the original RIA did not provide a comprehensive account of economic benefits and costs, even in a qualitative manner. The subsequent review, together with protests from those the Act most directly affected, led to the Act being repealed before the tribunal's decision took effect. This illustrated the importance of quality RIA, even after regulation has been introduced, to ensure policy effectiveness and prevent unnecessary cost or damage to competition.

Often RIA is embodied in a document presented to policy makers for decision. However, the document (an individual regulatory impact analysis) is merely the product of a broader system designed to improve the quality of policy analysis (OECD 2008b, p. 15). This paper explains the aspects of a good practice RIA system for transport regulations. It describes the rationale and the benefits of RIA frameworks that are applicable to transport regulation and provides advice on dealing with the practical realities of implementing RIA in the transport sector. It concludes with recommendations for governments seeking to implement RIA for transport regulation within their jurisdictions. Overall, RIA is crucial in both supporting the development and adoption of better public policies and enhancing the legitimacy of policy initiatives. Both outcomes favour greater acceptance of the policies and regulations adopted and higher rates of voluntary compliance with regulatory requirements (OECD 2008a). The box below sets out ten good RIA practices.

Box 1. Getting maximum benefit from RIA: good practices

1. **Maximise political commitment to RIA**. Reform principles and the use of RIA should be endorsed at the highest levels of government. RIA should be supported by clear ministerial accountability for compliance.

2. **Allocate responsibilities for RIA programme elements carefully**. Locating responsibility for RIA with regulators improves ''ownership'' and integration into decision-making. A central body is needed to oversee the RIA process and ensure consistency, credibility and quality. It needs adequate authority and skills to perform this function.

3. **Train the regulators**. Ensure that formal, properly designed programmes exist to give regulators the skills required to do high quality RIA.

4. **Use a consistent but flexible analytical method**. The benefit/cost principle should be adopted for all regulations, but analytical methods can vary as long as RIA identifies and weighs all significant positive and negative effects and integrates qualitative and quantitative analyses. Mandatory high-level guidelines should be issued to maximise consistency while giving analysts enough flexibility to tailor the methodologies to the characteristics of each regulated sector.

5. **Develop and implement data collection strategies**. Data quality is essential to useful analysis. An explicit policy should clarify quality standards for acceptable data and suggest strategies for collecting high quality data at minimum cost within time constraints.

6. **Target RIA efforts**. Resources should be applied to those regulations where impacts are most significant and where the prospects are best for altering regulatory outcomes. RIA should be applied to all significant policy proposals, whether implemented by law, lower level rules or Ministerial actions

7. **Integrate RIA with the policy-making process**, beginning as early as possible. Regulators should see RIA insights as integral to policy decisions, rather than as an ''add-on'' requirement for external consumption.

8. **Communicate the results**. Policy makers are rarely analysts. Results of RIA must be communicated clearly with concrete implications and options explicitly identified. The use of a common format aids effective communication. Limitations of the analysis should also be clearly acknowledged.

9. **Involve the public extensively**. Interest groups should be consulted widely and in a timely fashion. This is likely to mean a consultation process with a number of steps.

10. **Apply RIA to existing as well as new regulation**. RIA disciplines should also be applied to reviews of existing regulation.

Source: OECD 1997, p. 215

Description of RIA frameworks

The process of RIA

While there is no single framework that fits all types of regulatory analysis across sectors, drafting a good quality RIA tends to involve elements that are consistent across countries (OECD 2008a; OECD 2015a, p. 94; World Bank, 2010; UK Government, 2015; Australian Government, 2014; New Zealand Government 2013; Israel 2013). Below we summarise the OECD's schematic process for RIA.

Figure 1. **The OECD's schematic process of RIA**
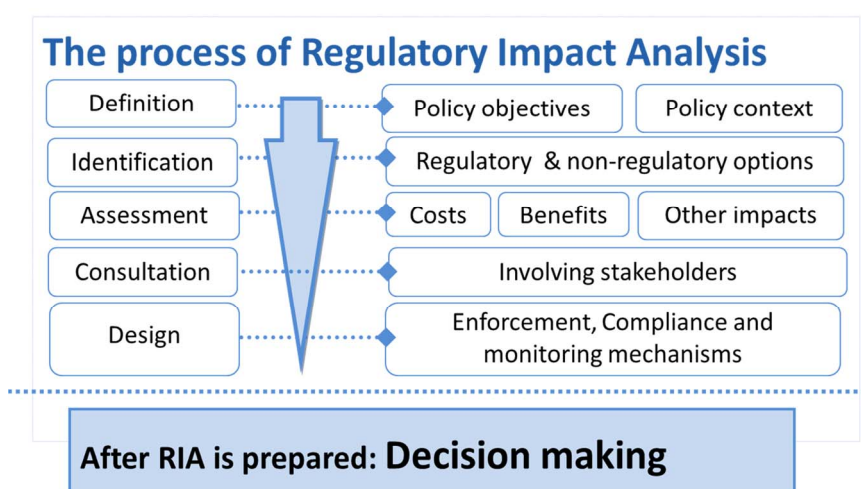
Source: OECD 2008b, p. 17

1. Define the problem, challenges and policy objective(s)

Roundtable participants were emphatic that this is the most important step in producing a useful RIA. Clear problem definition provides a focus for RIA authors to return to as the RIA develops. In turn, it allows the rest of the analysis to follow logically (Australia 2014, p. 18). It is crucial that administrations involve analysts and researchers at this early state of the RIA process, so as to benefit from the dividends of selecting the right regulatory interventions.

Common problems relate to economic efficiency (market failure, externalities, imperfect information and misuse of market power), equity considerations (distributional problems), environmental concerns and health and safety concerns (UK Government 2015, p. 62; Australian Government 2014, p. 18). In defining the problem it is useful to identify evidence demonstrating (UK Government 2015, p. 62):

- the nature of the problem

- its probability and frequency of occurrence

- its severity (or consequences)

- the groups it impacts

- the people and bodies best placed to manage or resolve it.

Defining the problem in this fashion facilitates clearly identifying relevant policy objectives. The UK government recommends that objectives be SMART:

- Specific

- Measurable

- Achievable

- Relevant

- Time bound

2. Identify potential options and their impact

Following problem identification and analysis, it is necessary to identify a range of options that would effectively achieve the policy objectives. To be useful to decision makers, each option must be practical and implementable (Australian Government 2014, p. 26). The options considered should include both regulatory and non-regulatory policy tools (i.e. alternatives to regulation).

All options should be measured against a properly specified "base case", which describes the evolution of the policy environment in the absence of any specific intervention (Australian Government 2014, p. 26; UK Government 2015, p. 64). The impacts of each option should be identified clearly. This includes considering:

- who the option will impact (directly or indirectly) and how (including economic, financial social and environmental impacts)

- how affected parties will respond

- what would the response mean for the effectiveness of the option.

For options that have a broader impact, experts considered it was particularly important to try to anticipate and identify an option's indirect, or unintended, consequences. For example, Burghouwt (2016) demonstrates how, in certain circumstances, the imposition of an air ticket tax results in supply side responses that may lead to base closures by airlines at certain airports. A key benefit of RIA is that its systemic nature implies that indirect, or "second round" impacts are more likely to be identified and assessed if the policy process includes this element.

3. Assess the costs and benefits of different options

For each option, policy-makers should aim to assess the societal impact of proposed changes. The foundations of welfare economics are well suited to support RIA in this task (Sunstein, 2017). Social welfare analysis involves identifying, specifying and quantifying the benefits and costs of proposed policy changes to understand whether regulations will yield total benefits in excess of expected costs to society.

When the analysis of costs and benefits is made explicit as part of RIA, impact assessments gain transparency and focus on the consequences of regulations, assisting decision makers in making value judgments about the option they consider most desirable. Where done effectively, this can also provide decision makers with a robust like-for-like comparison of different options (OECD 2008a, p. 7-9). Such comparison should also assess whether the expected effects are in line with the challenges and objectives identified in Step 1.

There are a range of methodological tools for assessing the welfare impacts of different policy options. Cost-Benefit Analysis (CBA) is the best available method for assessing the effects of regulation on economic efficiency, an important component of social welfare. The tradition of CBA in the transport sector is well-developed with respect to investment projects and can offer valuable insights to the application of CBA in assessing regulatory changes. Below, we summarise some of the other tools which may also be used, also highlighting some of the inherent limitations attached to each of them.

Box 2. Common impact assessment methodologies

Cost benefit analysis (CBA) is the gold standard tool for economic efficiency, and important component of social welfare. It identifies the predicted costs and benefits of different options over time, quantifies these impacts and presents them in a time neutral monetized form (currency value). This provides solid analysis that demonstrates which option(s), including non-regulatory options, provide the greatest net benefit to society.

Break-even analysis (BEA) is useful tool where the effectiveness of an intervention is highly uncertain, but the costs are well known. By quantifying the costs of an option, policy makers can know what value of expected benefits is necessary to justify the cost. For example, the introduction of new safety standards for car manufacturers may be judged efficient only if they reduce fatalities and serious injuries by at least 10%. Policy makers can then use judgment to determine whether they are satisfied an option would result in a net benefit to society.

Cost effectiveness analysis (CEA) is useful when the objectives of an intervention have been established, but there is uncertainty regarding the best way of achieving them. CEA involves measuring the ratio of benefit per unit of cost for each policy option and comparing the ratios to assess the relative cost effectiveness of each.

Multi criteria analysis (MCA) seeks to combine quantitative and qualitative information into a single methodology. Criteria are developed to indicate the effectiveness of different options. These criteria are ranked and weighted, with higher ranking criteria given greater weight. Each option is assessed against each criterion and given a score. The scores for each criterion are multiplied by the criterion's weight to give a weighted score for each option. The higher the weighted score, the greater the benefit to society. CBA and CEA can form part of an MCA.

Source: Adapted from OECD 2008a

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4. Consult affected stakeholders

Consultation is essential to a quality RIA and a useful tool from problem definition through to designing the preferred regulation (OECD 2008b, p. 18; World Bank 2010, p. 14). It:

- is one of the most cost effective ways of obtaining data and practical information about impacts, costs and benefits, of different policy options (OECD 2008a, p. 19);

- provides an opportunity to detect unintended consequences and allow governments to test the logic of potential regulatory options (OECD 2008a, p. 19);

- adds transparency, giving stakeholders an insight into how regulatory decisions will be made and an opportunity for engagement on issues important to them (World Bank p. 14);

- improves confidence in government process and the legitimacy of the overall outcome. (World Bank 2010, p. 14; OECD 2008a, p. 19). Stakeholders may be willing to accept a regulatory decision where they consider their concerns having been understood and taken into account, even if they disagree with the ultimate decision. In turn, this increases the likelihood of voluntary compliance with regulations (OECD 2008a, p. 19);

- provides an opportunity for stakeholders to put forward additional options that may solve the problem in a more cost effective manner.

With appropriate mechanisms such as anonymous publication in official reports, aggregation of data and confidentiality agreements, consultation can include the sharing of sensitive information to allow all stakeholders to improve the quality of consultations and present their views on the basis of more accurate information. This is crucial to obtain maximum participation in the transport sector, where competitors may not be willing to share financial and operational data.

5. Design enforcement, compliance and monitoring/data collection mechanisms

While voluntary compliance is an important regulatory dynamic, there is never total compliance with any regulation. As a result, the effectiveness of regulations is typically substantially dependent on the quality and quantity of the enforcement strategies adopted by regulators. Consequently, RIA should consider what compliance/enforcement mechanisms are necessary to ensure that a regulation is effectively implemented. Undertaking this analysis involves gathering evidence about matters such as (OECD 2008a, p. 22):

- the likely level of voluntary compliance

- what compliance/enforcement mechanisms are available, their costs and how effective they will be in increasing compliance (total compliance should never be assumed)

- what types and levels of penalties for non-compliance are effective, appropriate and proportionate.

RIA that is being conducted before regulation is put in place also provides an opportunity to build monitoring and ex post evaluation mechanisms into the regulation at the outset. These should put in place indicators, which are capable of measurement using objective data that demonstrate whether the regulation actually solves the defined problem and meets its objectives (European Commission 2015, p. 30). Designing monitoring and evaluation mechanisms in this way also allows an ex-post evaluation of whether the regulation is still needed (Australian Government 2014, p. 50).

The practical realities of RIA in the transport sector

Persuading policy-makers in the transport sector to integrate RIA into their decision making processes has not proven to be an easy task for several reasons. Implementing good RIA can be seen as a significant drain on scarce resources and as requiring specialist expertise that may be in short supply. RIA may also be seen as limiting agencies' freedom to act to achieve their underlying goals, particularly where it lays bare substantial costs which would not otherwise be readily apparent, while the benefits of thorough analysis are visible primarily in the medium to long-term. A further risk is that tools that focus solely on the costs of regulatory reforms can be (mis)used by those with vested interests to delay and discourage regulatory interventions. In addition, its results can be difficult to communicate (OECD, 2015a, pp.39-40).

The experience accumulated in the field of cost-benefit analysis and competition analysis[1] in the transport sector can mitigate some of these problems since policy-makers can rely on already existing bodies of evidence. Moreover, a number of ITF/OECD countries have set up independent transport agencies in recent years and these have developed substantial expertise in regulation, safety and environmental quality monitoring and policy-making more broadly. In order to fully implement RIA in the transport sector, the existence of high-level political support and the accumulation of experience over time are key factors of success.

The following paragraphs tackle some of the practical issues often encountered when making decisions about the extent to which proposed regulatory changes should be assessed.

Who should do RIA

RIA frameworks ensure that robust analysis is fully integrated in the policy making process (OECD 2009, p. 12). To achieve this aim, every regulatory proposal with impacts above a certain threshold should be subject to RIA, as discussed next. Transport ministries, agencies and regulators developing regulatory proposals therefore require some capability in the field of impact analysis. Ideally, each agency should have a core-team of experts who have appropriate training to undertake and promote RIA (OECD 2008b, p. 36).

However, RIA (especially in its more advanced forms) is a technically challenging exercise (OECD 2009, p. 20). The analytical skills to conduct RIA, especially to quantify impacts, may be in short supply (World Bank 2010, p. 13). As a result, government departments and agencies may need to target RIA efforts on the policies expected to have the greatest impacts. Capacity building, information-sharing and cooperation between experts is also fundamental.

Teams of experts and analysts in transport administrations should also be able to draw support and guidance from a central government regulatory reform unit, which coordinates RIA throughout government, providing support, guidelines and advice to agencies (OECD 2009, p.39). For instance, Finland established an independent Council of Regulatory Impact Analysis at the Prime Minister's Office in December 2015. The Council is responsible for issuing statements on government proposals and on their regulatory impact assessments. Nine RIA experts are appointed for a period of three years.

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[1] Many competition authorities perform and often publish assessments of the overall 'impact' of their decisions: these assessments quantify in a simple and concise manner the benefits expected to result from the decisions on mergers and antitrust infringements they took over the period under examination

When to do RIA

The principle of proportionality should be applied to RIA (OECD 2015a, p.97), with the most detailed and complete analyses being reserved the most significant and challenging regulations. This is where the greatest potential benefits lie, in terms of RIA's ability to improve regulatory outcomes, thus enhancing economic activity, transparency and community welfare (OECD 2008a, p. 40; World Bank 2010, p. 13).

OECD countries have opted for a number of approaches to target RIA (OECD, 2015b, p.103). In the United States, a full CBA is required if a regulatory measure is deemed to be economically significant (i.e. its expected annual cost is USD 100 million, approximately EUR 94 million), if it imposes major costs on a specific sector/region, or if it has significant adverse effects on competition, productivity, innovation or employment. Similarly, in Korea, RIA is required for regulations which have an estimated regulatory cost of over KRW 10 billion (approximately EUR 8.5 million), affect over 1 million people, restrain competition, are excessive in light of international standards or raise significant controversy among stakeholders. In the UK, there are different broad levels of analysis ranging from Level 1 (description of stakeholders affected by the regulatory change) to Level 4 (full monetisation of impacts) and RIA is tailored depending on the scale, duration and complexity of a policy's likely impacts.

Regulatory changes at the national level in the transport sector can have significant impacts and thus require extensive RIA under the proportionality principle. Nonetheless roundtable participants commented that an intellectually honest qualitative assessment may be an appropriate alternative where there is neither the data nor the skills to provide a robust quantitative analysis. Although RIA should permeate the whole process of regulatory interventions, resource constraints may require calibrating efforts at different stages. Three alternative approaches are available (OECD, 2015a, p.97):

- Invest as much as possible in ex ante RIA to minimise the probability of incorrectly choosing the wrong policy option, and then perform ex post evaluation after a given period of time (e.g. 5 years)

- Invest less in ex ante RIA when a policy option is clearly superior to others but adopt a tighter schedule for ex post evaluation (e.g. 2 years), a pilot phase and/or a detailed monitoring plan

- Select the most reversible policy option, so that in case of gross mis-evaluation at the outset, it will be easier to change the direction of policy later.

RIA can be carried out either ex ante or ex post and at different stages of the policy cycle, or both. Ex-post assessments are not only useful to verify whether the impact of newly implemented policies corresponds to the expected outcome, but also to collect information that informs future rulemaking in similar areas. In a number of jurisdictions there are mandatory requirements to carry out ex post analysis of regulatory changes. These include regulations at the European level (5 years after entry into force) and regulations contained in the Federal Register of Legal Instruments in Australia (10 years after entry into force). The presence of those requirements can have a positive influence on the quality of the RIA process and thus facilitate future revisions.

In this context, it is good practice to strengthen the links between ex ante and ex post analysis when drafting RIA documents. Monitoring changes over time is especially relevant in the transport sector given the time lags between regulations being approved and implementation is longer than in other sectors. Including a choice of indicators to be collected by the relevant transport authority that inform both the ex-ante analysis and form the basis of future monitoring and evaluation activity can help embed RIA in the policy cycle and facilitate future revisions and updates.

Transport policy needs good RIA more than some other sectors

Quality RIA is especially important for transport. Demand for transport services is derived demand – i.e. people's mobility is a function of their demand for goods and services in the economy (Bamford, 2001). Second, transport policy and regulation tends to be fairly far-reaching and embrace substantial second round (indirect) effects. Third, transport activity generates high external costs and benefits – i.e. both negative and positive externalities are produced beyond the sphere of transport markets, affecting health, productivity, safety, etc. (Maibach et al, 2008).

The specific characteristics of transport services and markets, including the different roles that transport services play in socio-economic terms, mean that RIA frameworks are particularly likely to yield major benefits when applied to transport policy. The general principles of RIA provide a robust framework within which transport policy and regulatory initiatives can be assessed, by allowing policy-makers to address complex direct and indirect impacts of policies through a reasoned process that brings together evidence from stakeholders at different levels.

At the same time, the characteristics of transport markets make completing quality RIA particularly challenging for transport regulation. As a result, impact assessments in the transport sector need to acknowledge that changes in the transport arena will have a series of impacts on other sectors of the economy and society, and that these impacts can be as significant as the direct impacts in transport markets. Transport policies tend to have financial and economic implications for other parts of government, such as those responsible for urban development and the environment. Moreover, there are implications on multi-dimensional issues of fairness such as equitable access to basic services for different income groups, regional accessibility and the treatment of workers in historically protected sectors when market opening takes place. These implications occur both horizontally across government departments and vertically across levels of government.

Good RIA provides policy-makers in the transport sector with a framework to identify these potential impacts more systematically, both in the case of well-known markets such as airport/airline relationships in the aviation industry and when making decisions about far reaching regulations that deal with equity and human rights such as accessible transport for all (Box 3).

Box 3. Mapping the potential impacts of regulatory changes in transport

In recent years, proposals around the introduction of aviation taxes have attracted considerable scrutiny and have ignited public debate in countries such as the Netherlands, the UK and Norway. The role of RIA in the midst of heated political discussions is most important. However much like in other transport industries, assessing the impacts of changes in aviation requires thorough analysis.

Mapping both direct and indirect impacts involves a consideration of direct costs for government (i.e. the regulatory burden of collecting and administering the tax), direct costs for airlines and potentially direct costs for passengers resulting from higher ticket prices. Next, there are a wide range of indirect affects that encompass supply reactions such as airlines base closures, demand reactions such as switch to alternative transport modes, broader economic impacts resulting from reduced connectivity, and environmental impacts linked to changes in aviation such as emissions and noise.

A similar framework can be applied to the assessment of accessibility provisions for mobility-impaired passengers such as requiring that buses be step-free. In many ITF/OECD countries, legislators and governments have explicitly enshrined accessibility as a right and a legal requirement; but progress in this field is slow and the implementation of accessibility-enhancing measures is constrained by competing demands for investment and an unclear understanding of the economic benefits of improved accessibility. While costs are often known, benefits are not clearly defined, quantified and documented.

> The International Transport Forum proposes an overall framework for classifying benefits and beneficiaries, without suggesting that all of the beneficiaries and benefits described should be included in every analysis of accessibility, but rather aiming to provide a complete list of potential impacts for different types of users (both disabled, mobility impaired and other encumbered passengers including temporarily) and for non-users (such as potential users). The indirect effects of accessible transport for all should also include the ability to access services more easily and more frequently and greater social inclusion, countering the risk of isolation which can lead to adverse psychological problems.
>
> Sources: UK Government (2016) for air passenger duties changes, available at https://www.gov.uk/government/publications/air-passenger-duty-rates/air-passenger-duty-rates; ITF (2016).

Quantification of expected impacts to demonstrate the merits of regulatory changes

Different methodologies to carry out the quantitative analysis of welfare impacts are available, as detailed in Box 3. The key difference between these methodologies lies in the way that benefits and costs are presented and compared in order to derive policy priorities. When both costs and benefits can be assessed, CBA is the best available method for assessing the effects of regulation on economic efficiency, an important component of social welfare. If costs are much easier to assess than benefits, there may be a preference for CE analysis, while if regulatory effectiveness is highly uncertain, there may be a preference for Break-even analysis.

Nonetheless all methodologies promote a principle of regulatory impact assessments: quantification and monetisation should be carried out, as far as practicable", consistent with the proportionality principle, to understand whether regulations will yield total benefits in excess of expected costs to society. There is little doubt that quantification, where possible, adds to the robustness of an impact assessment and can ultimately facilitate political decisions on the basis of more objective criteria.

However resource constraints may mean that efforts to quantify potential impacts need to be proportionate to the magnitude of the measures proposed. If the ability to quantify impacts is limited, decisions on whether or not to include quantitative estimates of impacts should be based on:

1. Qualitative analysis of the range of impacts expected from the proposed regulation

2. Estimates of the resource and time constraints for those involved in RIA

3. Transparency and availability of data to assess likely impacts

4. Confidence in the methodology selected to produce the quantitative results

In considering whether to quantify impacts, qualitative analysis of expected impacts can inform decisions by providing insights into the likely magnitude of impacts and the range of affected parties. Specific thresholds to target RIA can be established as discussed above in "When to do RIA".

In the transport sector, the existing availability of good statistics and the presence of sophisticated modelling tools provide a good foundation for quantification (i.e. effects on the supply of transport services, on passenger and freight demand, on accessibility for groups of society, etc.) and monetisation (i.e. the conversion of quantified impacts into monetary values based on welfare economics principles). A well-developed evidence base helps the RIA process at different stages. Good statistics can inform the analysis of problems at the initial stage; models and datasets can provide a steer on the order of magnitude of impacts as well as provide a basis for future monitoring and evaluation.

In most OECD countries, transport statistics are collected regularly by dedicated departments. In addition, international, national and regional transport models have been developed to analyse and forecast both passenger and freight flows. Consistent statistics and detailed modelling are relied upon to assess the impacts that transport investment projects are likely to have. One typical impact category used in these assessments is direct travel time savings for transport users. In most OECD countries, and particularly in northern Europe and Australasia, time savings are monetised and included in CBA together with other quantitative and qualitative impacts. Crucially some of the additional impacts that are typically quantified are not limited to the transport sphere, and provide an estimate of how transport impacts are transmitted through the economy into changes in employment and economic outputs (Mackie and Worsley, 2013). A well-developed evidence base in the transport sector helps the RIA process at different stages. Some important differences between quantitative assessments of transport investment and impact assessment are present, as summarised in Table 1 below

Table 1. **Comparison of quantitative techniques in the transport sector**

	CBA for investment projects	**Quantitative component of RIA**
Data	Available from existing datasets or collected ad-hoc through surveys/models	Available from existing datasets or collected ad-hoc through surveys/models
Modelling	Based on available national/regional models and bespoke modelling tools	Ad-hoc; needs to account for behavioural responses of users and businesses
Outputs	Conventional and wider economic benefits Capital and operating costs.	Benefits to different stakeholders Regulatory costs; business costs
Monetisation	Based on standardised values	More discretionary, not always optimal
Summary outcome	BCR, NPV, Distributional analysis	BCR, NPV, Magnitude of impacts (high/low), Distributional analysis

Experience with CBA in the transport sector, and modelling and quantification more broadly, has been adapted to inform and support RIA of rail reform in different contexts. While Crozet (2016) presents a number of techniques that can be used to assess regulatory changes in the rail sector, the examples discussed in Annex 1 provide specific case studies of quantitative techniques for RIA and the benefits of applying the framework to the sector:

- Europe – New roles and responsibilities for the European Union Agency for Railways (ex-ante)

- UK – Increasing competition in passenger services (ex-ante)

- Japan – Cabinet Office's assessment of rail privatisation (ex-post)

The case studies show that the use of quantitative techniques to assess regulatory changes is gaining popularity in the rail policy arena. Assessments are often commissioned by government agencies and carried out by specialised consultants and/or academics. In each case, quantification is facilitated by the existence of detailed databases containing historical market data as well as by involving stakeholders in data provision at the early stages of the RIA process. The framework is adopted in a flexible manner and expert judgement is used in each case to decide which impacts are both significant and more easily quantifiable. The rigorous application of RIA together with a quantification of expected impacts has been beneficial to inform the decision-making process in all three cases.

Outstanding challenges

While OECD countries are increasingly adopting quantitative methodologies for RIA, challenges remain in ensuring that RIA is an effective tool for policy making. These include calibrating the depth and scope of the analysis to the significance of the policy and regulation being assessed and the use of RIA in the early stages of the decision-making process so that it can be used to evaluate different policy options (OECD, 2015b).

Even in advanced economies such as Sweden, analysis of RIA undertaken in recent years reveals that the current system is highly fragmented and the responsibility for the implementation of RIA is in the hands of several government agencies with different strategic objectives (Nerhagen and Forsstedt, 2016). The Swedish sample also reveals that: nearly 90% of RIAs lack an evidence-based problem description; only a small share of RIAs includes a quantification of societal costs and benefits, with a disproportionate focus on SME impacts, and; different government units developed "their own" RIA without, as it seems, synergy effects.

These examples point to some of the outstanding challenges for implementing RIA, including in the transport sector. The success of this framework relies heavily on the presence of a whole-of-government approach that encourages evidence-based decision making and limits the opportunities for political manipulation of the process itself. In practice, it is clear that to make a success of RIA governments should ensure that RIA is embedded in the policy cycle and that clear responsibilities are assigned as to who should carry it out and when. The availability of good quality data on transport markets and related impacts is paramount if RIA is to include a quantitative assessment of costs and benefits, and to ensure that effective monitoring of outcomes takes place over time.

Box 4. Political aspects of RIA

The political economy of regulatory impact analysis (RIA) in general and cost-benefit analysis (CBA) in particular has a long history, and the tools have been used in different ways.

On the one hand, economists as far back as Jules Dupuit have urged the use of something like CBA for the thorough and dispassionate analysis of proposals for public-works projects put forward by politicians, ministers, and bureaucrats. In the US for example, the Federal Navigation Act of 1936 and the Flood Control Act of 1939 sought to rein in legislative proposals for projects to be carried out by the Army Corps of Engineers by mandating a formal analysis of the likely costs and benefits, direct and indirect, of such projects. More recently, proposed government-funded transport projects in the EU, UK, the Netherlands, Canada, Australia, and other jurisdictions have been required by legislation and/or regulation to be subject to cost-benefit analysis. These approaches, as recognized in this report, promote an analysis of welfare benefits that projects/policies yield to society as a whole.

On the other hand, analytical tools that focus solely on the costs of regulatory reforms (or a subset of costs) can be (mis)used by those with vested interests to delay and discourage regulatory interventions. By highlighting the costs to them of regulations, vested interests may be able to seize on an inability of other stakeholders (including policy makers) to identify and/or quantify benefits with enough certainty. There are examples in the United States of this information asymmetry being used successfully to block proposed regulations both in government agencies and in the courts.

In part this dichotomy of approaches reflects a more philosophical divide. Those urging the broader use of CBA and RIA argue that at the very least, government-sponsored projects should be efficient: efficiently chosen and efficiently carried out, satisfying the arguably simple and straightforward (indeed minimal) requirement that a project's foreseeable benefits exceed its costs. Those urging a limited reliance on formal (and especially formally quantitative) analysis argue that any reasonable social-welfare function includes other arguments besides efficiency – especially equity and distribution. Therefore, in practice, the focus on CBA and its seemingly simple and straightforward results has crowded out more nuanced analyses. These critics also focus on some weaknesses perhaps inherent in the CBA of many projects. These include the difficulty of monetising benefits such as a clean environment and the controversies inherent in expressing the value of future events in today's money. This is typical of events with potentially large but uncertain impacts that may take place in the very distant future (See van Wee 2016 and ITF 2011).

In practice, policy-makers need to separate the role/intrinsic characteristics of RIA/CBA from problems/inadequacies of its use in certain circumstances. In a world of increasing demands on government to act in an ever wider range of policy dimensions, the imperatives of efficiency and objectivity are increasingly important. RIA/CBA can offer much in this area, particularly by identifying the most cost-effective means of achieving certain social objectives. Any argument around regulatory changes that focus exclusively on either benefits or costs (or a subset of those) runs the risk of promoting partial assessments that are politically biased.

Sources: Coates J. C., 2015; Schwartz and Nelson, 2016; Sinden, 2016; https://www.aar.org/newsandevents/Press-Releases/Pages/AAR-President-and-CEO-Calls-On-US-Surface-Transportation-Board-To-Halt-All-Major-Rulemakings-Until-New-Administration-Insta.aspx; https://www.aar.org/public/Documents/Communications/Open%20letter%20to%20transition%20team.pdf

Communication

Effectively communicating the results of individual RIAs is important to ensuring the benefits of RIA are achieved. Without effective communication, RIA risks being less influential with policy makers and stakeholders, potentially leading to less evidence-based policy making approaches. However, good quality RIA can involve very technical analysis (especially with fully monetized cost benefit analyses), which is not accessible to key audiences. Policy makers are rarely technical analysts (OECD 1997 p. 215). Neither are the key stakeholders that new regulations affect. As a result, it is necessary to communicate the results of RIA with a reasonable level of simplicity and conciseness (OECD 2008b, p. 55). Ensuring that policy makers and stakeholders understand the results of RIA and the reasons for a preferred regulatory option improves RIA's ability to be a valuable input into policy maker's considerations and a mechanism to gain stakeholders' acceptance for regulatory reform (OECD 2008a, p. 22).

Several countries have taken steps to make RIAs more accessible and improve how RIA results are communicated. For example, the government of the United Kingdom uses summary tables to distil the key aspects of each RIA's analysis and recommendations (UK Government, p. 80 – see Annex 2). Similarly, the European Commission uses a two-page summary in addition to a 30-40 report aimed at non-experts, with more technical analysis presented in separate annexes (European Commission 2015, p. 31).

Technology is also offering new opportunities to promote consultation and feedback. At the end of 2016, the US government launched *RegInfo Mobile*, an application that allows users to access information about the status of federal regulations and information collection requests on their smartphones. In recent years, the European Commission has promoted the use of online surveys to assist in the design of questionnaires and correspondence with interested stakeholders during the RIA process.

There are also other measures being developed make the written style of RIA more accessible. For example, New Zealand's Ministry of Transport has used composite individual citizens to demonstrate the possible impacts of policies and to more effectively communicate concepts and policy impacts (Ministry of Transport 2015, p. 11). This involves modelling and explaining the impacts of different policy options on an individual with particular characteristics, such as a particular age or gender. While none of the characters or archetypes is an actual individual, they represent an "average" person from a particular demographic group. The European Commission has begun using narrative elements, such as calls for urgent action, to make technical analysis more tangible and bridge the gap between evidence based and political considerations (Radaelli, Dunlop and Fritsch 2013, p. 508).

Conclusion and recommendations

Coherent and effective policy and regulations require the use of frameworks based on evidence and analysis. Without such a foundation in evidence and analysis, it is unlikely that decision makers will be able to effectively weigh different options and make regulations that maximise the benefit to society. In turn, regulatory action would be sub-optimal, at best, or counter-productive.

Regulatory impact analysis (RIA) is a tool to ensure policy coherence and effectiveness. When fully-implemented, it creates a system in which institutions and their staff adopt a whole-of-government, evidence-based approach to impact assessments. They develop policy and regulations using processes that gather evidence, consult with stakeholders, explore assumptions and systematically identify and assess the expected impacts of different options.

The specific characteristics of transport services and markets, including the different roles that transport services play in socio-economic terms, mean that RIA frameworks are particularly likely to yield major benefits when applied to transport policy. The general principles of RIA provide a robust framework within which transport policy and regulatory initiatives can be assessed, by allowing policy-makers to address complex direct and indirect impacts of policies through a reasoned process that brings together evidence from stakeholders at different levels.

At the same time, in this sector, there are already proven analytical tools and extensive statistics for analysing investments and infrastructure performance, and a history of using them in decision making. Therefore, the transport sector has a strong foundation from which to implement quality RIA as shown in the examples provided in this paper.

This paper has surveyed various tools, structures and methods for undertaking quality RIA relating to transport policies and regulations. It demonstrates a series of good practice measure governments would ideally implement as part of an RIA system. These include:

- Clearly acknowledging the assumptions and limitations of the analyses used in RIA to enable decision makers to clearly identify uncertainty and exercise judgement, bearing in mind that decisions in the transport sector can have long implementation time lags.

- Quantifying impacts on social welfare as much as possible, to enable the comparison of potential outcomes on a like for like basis using CBA as the preferred methodology for assessments in light of its widespread use in transport projects analysis.

- Making RIA a regular part of the policy making cycle when proposing new policy or evaluating existing policy, systematically highlighting the linkages between proposed regulatory changes and high-level transport vision and policy objectives, linking ex-ante and ex-post reviews. Setting up future evidence gathering activities as part of ex-ante RIA enables better future policy evaluation, including by introducing monitoring indicators based on regularly collected transport statistics.

Entrenching an RIA-culture should also be a goal of an RIA system, as it entrenches evidence and analysis as the foundation for policy making, assisting in the development of coherent and effective policy. Some measures to ensure an RIA culture include:

- Ensure high level political support for RIA as a method of policy making, with a whole-of-government approach promoting cooperation across sectors.

- Develop skills in the relevant administrations to carry out RIA and the benefits it provides to them as well as society, building on existing experience in evaluation methodologies in the transport sector.

- Include a central oversight institution, to support staff carrying out RIA and ensure quality control; this may correspond to independent transport authorities depending on a country's institutional architecture.

- Clearly assign responsibilities – which staff and institutions do what and in which timeframes.

Amongst other things, this paper has sought to demonstrate that the process of systematically analysing impacts is more important to improving policy outcomes than the precision in any specific calculations and presence of any specific institutions. RIA, even when it is not particularly complicated, is vital to ensuring good quality regulation. As a result, even where the best practice measures above are not feasible, a shared conclusion from the roundtable discussion is that all governments should make full use of RIA frameworks to assist them in developing and implementing more coherent, effective transport regulations. There are numerous practical examples[2] of good quality RIA that can provide a useful template for implementation; international comparisons and information exchanges shall continue to advance capabilities in this field.

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[2] See Annex 1 for rail case studies; Deighton-Smith (2016) for road safety regulations; UK (2016) for air passenger duties changes, available at https://www.gov.uk/government/publications/air-passenger-duty-rates/air-passenger-duty-rates and Ireland (2008) for reforms in trade licensing provisions, available at http://www.aviationreg.ie/_fileupload/Image/2008-09-11_CP5_TTReview_Revision.pdf

Annex 1: RIA case studies in the rail sector

Case study 1 – Reforming the EU Agency for Railways (ERA)

The creation of a Single European Railway Area is a long-term goal of rail policy at the European level. The European Commission has introduced legislative measures since 1991, including four "Railway Packages", aiming to open national markets to competition and increase the interoperability of railways at the EU level. The latest legislative effort, known as Fourth Railway Package, focuses on the removal of remaining administrative and technical barriers by establishing a common approach to safety and interoperability rules for rail companies across the EU (EC COM(2013)27 final). A key proposal involves reforming the structure, funding and the powers of the European Union Agency for Railways (ERA) to take over some of the responsibilities currently resting with national authorities on safety certification and vehicle authorisations – this forms the "Technical Pillar" of the Fourth Railway Package.

Proposals were subject to a full RIA, in line with the Commission's guidelines stating that "an impact assessment is required for Commission initiatives that are likely to have significant economic, environmental or social impacts" (European Commission, 2015). Specifically, each RIA at the EU level needs to answer the following questions:

1. What is the problem and why is it a problem?

2. Why should the EU act?

3. What should be achieved (objectives)?

4. What are the various options to achieve the objectives?

5. What are their economic, social and environmental impacts and who will be affected?

6. How do the different options compare in terms of their effectiveness and efficiency?

7. How will monitoring and subsequent retrospective evaluation be organised?

The impact assessment was carried out by an external consultant and published in 2012. Following the identification of existing problems with the current arrangements for safety certification and vehicle authorisation across Europe, the assessment outlines the policy goals of the initiatives, verifies the strategic fit with the EU's long-term objectives and details six policy options to reform ERA and streamline the processes of certification and authorisation of rail companies in Europe. A quantification of costs and benefits follows.

The evidence base for the RIA was collected in part relying on ERA's extensive dataset and in part through a stakeholder questionnaire, reaching rail operators, authorities and industry representatives in all Member States. Crucially, the questionnaire contained both a number of questions related to the proposed regulatory changes and a set of specific data requests, including authorisation and certification costs for rolling stock and information on the administrative cost of carrying out current technical functions at the national level.

The quantification methodology adopted in this impact assessment involves comparing 4 of the 6 proposed policy options (2 were discarded on qualitative grounds) against a baseline business-as-usual

scenario. For each policy option, the benefits arise principally from savings in authorisation and certification timescales as well as in lower costs, for instance by removing the need to re-authorise vehicles in different EU countries in the presence of an authorisation valid across the EU provided by ERA. The costs relate primarily to the change in net costs (resulting in a saving for all options) that arises from a shift of competences from national authorities to ERA.

The appraisal of costs and benefits is done by comparing the net present value of each policy option against the baseline scenario. It uses a conventional framework whereby future impacts are calculated over a 10 year period (2015-2025) and discounted. The quantitative results are reported in Table 2 below. The preferred policy option, maximising efficiency and effectiveness, is the third one.

In addition to the quantified impacts, the impact assessment provides a rationale for assessing a range of impacts qualitatively only. The rationale states that it would not be appropriate to estimate additional indirect impacts beyond the direct cost and time savings quantified because the quantification of direct impacts is in itself riddled with uncertainty. An extra layer of complexity built on this uncertainty is deemed too problematic. Furthermore, the causality between lower costs and indirect impacts such as greater rail activity and increased investment in rolling stock is too weak based on available evidence. A number of impacts are thus assessed qualitatively, ranging from zero impact to medium impact.

Table 2. **Summary of quantitative assessment of policy options to reform the ERA**

Policy option	Efficiency (Total net benefit - €m)	Effectiveness (Number of operational objectives met)
1. Further ERA coordination	411	1
2. ERA as a 'One-Stop Shop'	461	2
3. ERA and national authorities share competencies	497	3
4. ERA takes over activities of national authorities regarding authorisation and certification	476	3

Source: European Commission, COM(2013) 27 final, January 2013

Case study 2 – Increasing competition in passenger services

The supply of passenger rail services in Great Britain involves competition for the market, by way of the competitive bidding for franchises to operate passenger services in a region or on a major route for a specified period of time (ORR, 2015). There is also a degree of competition in the market between train operators by way of overlapping franchises, parallel franchises and open access operators (OAO) competing with franchisees – although these mechanisms are limited by a regulatory framework that seeks to balance greater competition with the need to protect the stability of franchises and the funding of the network.

The Competition and Market Authority (CMA) has worked closely with the Office of Rail and Road (ORR) to assess whether the current framework in which competition is primarily achieved through a process of competition 'for' the market is the best way to deliver value for money and service quality in the sector, or whether more significant benefits could be achieved by introducing a greater degree of competition in the market. This is part of the CMA's statutory duty to promote competition for the benefit of consumers and its strategic steer to challenge Government where Government is creating barriers to competition.

The CMA published a discussion paper for consultation in July 2015 setting out the benefits that greater in-market competition could deliver and the challenges that would need to be addressed. The paper builds on extensive analysis of the available evidence and stakeholder consultation. In addition to examining potential passenger benefits, the CMA also examined the potential for greater competition in the market to deliver efficiency gains. As part of this assessment, the CMA commissioned an econometric study which suggested that efficiency advantages offered by open access operators more than offset any cost disadvantages and that expanding the role of open access has the potential to deliver greater efficiencies including from dynamic competition and upstream competition. The availability of detailed data on operators' costs, traffic and performance regularly collected by the ORR facilitated this preliminary assessment.

In its consultation paper, the CMA put forward four policy options to increase the degree of competition. During the consultation period, the ORR commissioned an independent impact assessment which examined the legal and operational feasibility of each option. It also undertook both a quantitative and qualitative assessment of the options, considering the impact on passenger outcomes (such as fares and service quality), meeting social objectives (such as investment and accessibility), wider benefits (such as facilitating economic growth), impact on industry costs and efficiency and impact on rail industry funding and affordability.

The appraisal of costs and benefits was done by calculating the net present value of each policy option vis-à-vis a baseline scenario (business-as-usual). Future impacts are calculated over a 20 year period assuming implementation in 2023 and discounted. The quantitative results are reported in Table 3 below. The analysis was carried out by route for each of the three main intercity corridors in the UK as the evidence examined by the CMA suggested that greater in market competition had the potential to deliver the most significant benefits on longer distance routes. Option 3 was only tested in the case of the Great Western Main Line as there is currently only limited overlap between franchisees on these routes. In addition, the consultants agreed not to quantify the impacts of Option 4 given the high degree of uncertainty linked to the policy proposals at this stage. The preferred policy option for all routes considered appears to be Option 1, increasing open access operations alongside existing franchises.

Table 3. **Summary of quantitative analysis of policy options for greater competition**

Policy option	West Coast	East Coast	Great Western
	Estimated impacts (GBP million, 20-year appraisal)		
1. Increasing the role of OAOs alongside franchises	915	489	262
2. Having two competing franchise operators in each franchise area	95	236	--
3. Increasing the overlap between franchises	--	--	56
4. Licensing multiple operators, subject to conditions	--	--	--

Source: ORR (2015)

The CMA invited further comments on the four options in its discussion document in light of the impact assessment. Taking all the evidence into account, the CMA recommended in its final report published in March 2016 that Option 1 would deliver the most immediate benefits from increased competition – but that a move towards a system of multiple licensed operators replacing franchises would merit consideration at a later date. In parallel, the CMA recommended that Option 2 should be considered on areas of the network where it has potential to deliver greater benefits.

Case study 3 – Railway privatisation in Japan

Ex-post impact assessment of rail privatisation has been done in Japan by the Committee on Regulatory Impact Analysis in the Field of Public Utility Rates, Cabinet Office (CAO). The reforms of the former Japan National Railway (JNR) took place in 1987 when the privatisation process started. JNR was privatised and split into six passenger railway companies and one freight railway company (the JR companies). The assessment is based on data for the year 2000 and published in 2005 following a request from the Price Stability Policy Council, located in the CAO.

The privatisation was the consequence of JNR's huge deficit. The deficit started from 1964 ended up with de facto bankruptcy in 1986. Urban sprawl and motorization changed transport structure as well as the pattern of logistics in Japan, and exacerbated the financial deterioration. For instance, although JNR had over 50% share of the passenger and freight transport market with all mode combined until 1960 and 1955 respectively, its share went down to approximately 5% in 1985.

It was said that the monopolistic nature of the public corporation system made JNR operate inefficiently and not adapting to the changes in the market. The regulation on its fare setting, human resource management, and investment plan did not give their management team room for independent decision making, and made the chain of responsibility within the company uncertain.

The assessment aims to quantify the impacts of privatisation by comparing what happened with a baseline scenario of JR remaining in public ownership. The comparison tests two different scenarios: one under which JR would have been able to continue raising fares (but to a lower extent than JNR) over time (Case 1) to address its financial deficits, and; another scenario under which JR continues to have same fixed fare as JNR (Case 2).

The analysis employs a welfare analysis approach, and focuses on two types of benefits: user benefits and supplier benefits (in the form of consumer and producer surplus), which together provide an estimate of total welfare changes expressed in 251 billion yen in Case 1, and in 80.6 billion yen in Case 2.

In the analysis, increased user benefits by the privatisation consist of saving of travel time, saving of travel cost (cheaper fare), enhanced comfort on the train (alleviated crowding), improvement of transfer at stations, and enhancement in accessibility (e.g. wheelchair-accessibility), while supplier benefits are calculated only by a change in operators' revenue.

The benefit calculation methodology follows the "Project Evaluation Manual of Rail Projects" issued in 2005 (renewed in 2012). The Japanese Ministry of Land, Infrastructure, Transport and Tourism has been working on the ex-post appraisal of public infrastructure project since 1999, and finally, the ex-post appraisal became mandatory for public infrastructure projects from 2003 on. In line with this move, the "Project Evaluation Manual of Rail Projects" of 2005 has been developed for use in the ex-post appraisal for railway project.

The demand forecast analysis examines four processes: trip generation, trip distribution, mode choice, and route assignment. For trip generation and distribution, the population and general traffic volume are fixed at the volume of 2000. For mode choice, the analysis divides the whole traffic into the traffic of pedestrians and other transport modes (rail, automobile, bus), and then uses a disaggregated modal choice model to calculate the resulting number of railway passengers. For route assignment, it uses a disaggregated demand model (given by the Council for Transport Policy) to calculate the number of railway passengers for respective railway lines.

The data used to forecast the railway passenger volume is sourced from the Tokyo Metropolitan Area Person Trip Survey (performed by groups from different layers of governments), the National Census, the Basic Resident Register, and the Establishment and Enterprise Census. The base year of

2000 was selected because of the rich data available for the periodic National Census year. The authors would have preferred to carry out the analysis at the national level, but data limitations on railway passenger trips led to the decision to focus on the Tokyo Metropolitan area (Tokyo, Kanagawa, Saitama, Chiba, and southern Ibaraki) only. This area was divided into zones with five layers: prefectural level, block level, municipal level (333 zones), PT Survey's basic planning zone level (651 zones), and dense rail network zone level (dividing the 651 zone into 2482 zones).

The ex-post RIA concluded that privatisation had been the appropriate policy choice and quantified the benefits of having pursued this policy. The quantitative assessment carried out by CAO shows that precision was chosen over comprehensiveness. The analysis focused on a single year and a specific area of the country because data were more readily available. The results however provide a large enough confidence margin to say that the policy as a whole has been successful and welfare-improving.

Annex 2: IA Summary Sheet – UK government

Title: IA No: RPC Reference No: Lead department or agency: Other departments or agencies:	**Impact Assessment (IA)**
	Date: 01/01/2016
	Stage: Development/Options
	Source of intervention: Domestic
	Type of measure: Primary legislation
	Contact for enquiries:

Summary: Intervention and Options	**RPC Opinion:** RPC Opinion Status

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANDCB in 2014 prices)	**One-In, Three-Out**	**Business Impact Target Status**
£m	£m	£m	Not in scope	Qualifying provision

What is the problem under consideration? Why is government intervention necessary?
Maximum of 7 lines

What are the policy objectives and the intended effects?
Maximum of 7 lines

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)
Maximum of 10 lines

Will the policy be reviewed? It will/will not be reviewed. If applicable, set review date: Month/Year				
Does implementation go beyond minimum EU requirements?		Yes / No / N/A		
Are any of these organisations in scope?	**Micro** Yes/No	**Small** Yes/No	**Medium** Yes/No	**Large** Yes/No
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)	**Traded:**		**Non-traded:**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: _____ Date: _____

Source: UK Government

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