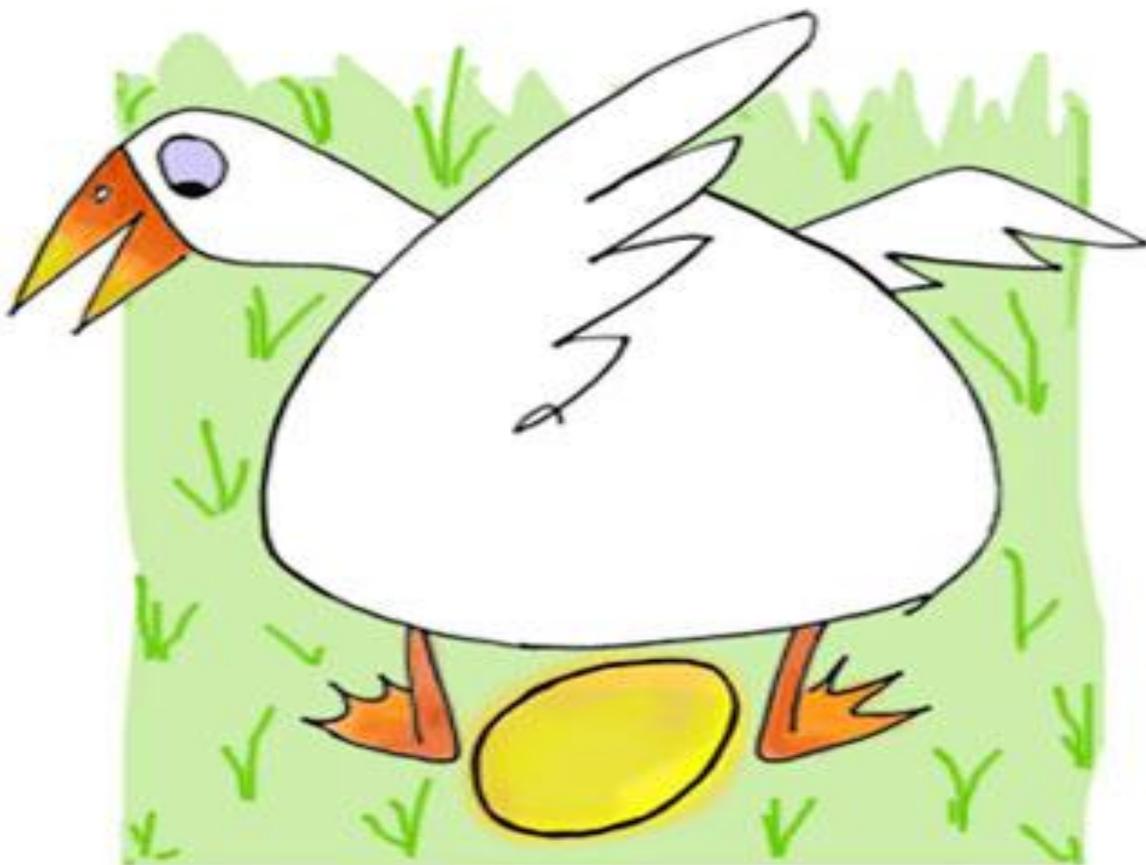


# ***RE-USE OF PUBLIC SECTOR INFORMATION – Catalogue and highlights of studies, cases and key figures on economic effects of changing policies***



**By Marc de Vries**

Under an assignment from the Danish Ministry for Housing, Urban and Rural Affairs

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## FOREWORD

Currently the Danish Government is considering a proposal for a “base data program”, aiming at a more efficient use and re-use of public key (or base) data within the public as well as the private sector. Decisions about the financing and implementation of the program are still pending.

Clear and increasingly common evidence – from Denmark and many other parts of the world – supports the idea that the value of re-using public sector information (PSI) is unexploited.

However, today it is difficult to present detailed and robust business cases to decision makers as extensive PSI re-use is assumed to require a rather fundamental change in the PSI policy. The necessary change must effectively liberalise PSI re-use regimes by removing traditional barriers such as licence charging and the imposing of intellectual property rights. Consequently, until now, changes have only been implemented in a few places and to a limited extent; research and other investigations have only a slim empirical basis.

Still, solid evidence of the potential value for society of improved PSI re-use exists and this document seeks to collect and present these results in the form of a catalogue.

The aim of this document is to support the Danish stakeholders as they proceed to decide on the implementation of the base data program by providing a firm, fact-based, foundation for further decision making. It does so by providing further context; setting out the economic effects observed from recent shifts towards marginal cost models for PSI re-use. Conclusions drawn from this evidence may helpfully inform forthcoming stakeholder discussions and the program’s implementation. Indeed, as the issue of PSI re-use is also on the agenda in other countries, it is hoped that this document will benefit a wider audience still.

Accordingly, this document highlights key economic research from around the world concerned with changes to governmental PSI re-use charging policies. In particular, it focuses on increases in economic activity, and the subsequent growth of employment and in innovation, which results from more liberalised PSI re-use regimes adopted by public sector bodies (PSBs). In addition, where available, it provides details on the effects of the policy changes on the PSBs themselves.

### *The author*

The article has been written by Marc de Vries, an independent Dutch consultant, who has been working on re-use of public sector information – mainly on legal issues and economic effects – for over 15 years, for the Dutch government as well as European institutions and other Member States. Obviously, the views in this article represent those of the author.<sup>1</sup>



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## EXECUTIVE SUMMARY

### Evidence of unexploited value in PSI

Research into economic effects of charging by public sector bodies (PSBs) for re-use of their public sector information (PSI) has recently enjoyed a surge in popularity. Where previously only a few authors were concerned with this matter, over the last few years a steady stream of reports and studies has sprung from the academic world, policy makers and re-users.

This trend supports the notion that there is tremendous unexploited value in PSI, often obstructed from being realised by existing financing schemes. Indeed, there is a growing body of evidence which strongly suggests that taking away barriers for re-use has beneficial impacts on not only the downstream market (that is, on economic growth, employment and innovation), but also the public sector itself, due to observed increases in efficiency and effectiveness.

Further, economic theory supports the idea that the unexploited value in PSI can be released by liberalising PSI re-use regimes<sup>2</sup>.

### The catalogue

This catalogue lists and highlights the key outcomes of a selection of recent reports and case studies in this field. The summaries, each set out in an easy-to-read format, come from a wide array of sources (national, EU, outside EU) and cover the full spectrum of important PSI domains.

The material is up-to-date and robust, incorporating a selection of six studies and seven cases from the main PSI domains, thus relating to geographic, meteorological, hydrographical, business and statistical information. The main findings of each study are highlighted, together with their context, a basic set of metadata and links to the source.

The first part is a high level view and outlines six recent studies (from 2008 – 2012), providing a general theoretical background on the economics of PSI (Pollock, 2009), an overall assessment of the European market value for PSI re-use (Vickery, 2011) and the voluminous POPSIS study, describing and analysing 21 case studies from all main PSI domains across Europe. Hereafter the focus is on three sectorial studies which give insight into PSI re-use facts and figures in specific domains: Newbery a.o. on UK Trading Funds (2008), Pettifer on the unfulfilled European meteo market potential (2008), and Koski pulling together various studies in the geo domain (2011).

The cases, some drawn from the above studies, provide concrete figures on economic effects resulting from PSBs moving from a cost recovery towards a marginal cost, or even free, PSI re-use charging model. The studies cover the main PSI fields, in particular: the geographic domain (Spanish Cadastre (2011), Austrian geographic information (GI) (2011) and Australian GI (2011)), the meteo domain (Dutch and Norwegian National Meteo Offices (both 2011) and a hypothetical case on small and medium size enterprises (SMEs) seeking to enter the meteo market (Pettifer, 2007)), and, lastly, two Australian cases in the hydrographical and statistical domain (both 2011).

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<sup>2</sup> See "Funding of a system of key registers in a PSI-conomis and contemporary perspective – the Dutch experience in a Danish context", by Marc de Vries under assignment from the Danish Ministry for Housing, Urban and Rural Affairs, The Hague, Copenhagen, 28 April 2012.

## Conclusions

The main conclusions identified are as follows:

1. The market size for PSI re-use is economically significant (Vickery) and so is the unexploited potential (Pettifer, Koski).
2. There appear to be specific 'economic laws' for PSI re-use (Pollock, Newbery, POPSIS).
3. Based on these laws, there is a clear trend towards a model whereby the marginal costs for facilitating re-use are charged (or less) (POPSIS).
4. Where charges are lowered, spectacular increases in demand are seen, both in terms of volumes and users and the variety of users (non-commercial and commercial, in particular SMEs – POPSIS).
5. The empirical results point to substantial positive network effects downstream (Pollock, Newbery, POPSIS, Koski, Pettifer), even if these are hard to measure, as is particularly the case with respect to those types of PSI which have infrastructural value and which cross easily into other domains (e.g. geographical PSI - Spanish Cadastre, Austrian and Australian GI cases).
6. Types of PSI which allow for more 'isolated measurements', like meteorological and hydrographical information (KNMI and Norwegian met Office cases), suggest demand price elasticity well over a factor 1 - meaning that lowered prices increase turn over (Pollock, Newbery, POPSIS, Koski, Pettifer).
7. Conversely, costs hardly increase even in the face of spectacular rises in demand (POPSIS, Pollock, Newbery and all case studies), decreasing average costs towards the level of fixed costs.
8. Financing appears to be a main obstacle to change, where PSBs are stuck in the 'own re-use income reliance trap' (POPSIS). Then again, put into the context of the organisation's full budget, these incomes are insignificant (often less than 5%) (POPSIS).
9. Subsequently, rechanneling of funds, covering costs from the State budget and lifting the burden to partly generate own income requires relatively small amounts (KNMI, Norwegian Met Office, POPSIS, Australian cases) and effects kick in swiftly, after 1-2 years (Pollock, Newbery).
10. Effects on PSBs moving to marginal costs regime appear to be beneficial as well: closer connection to the public task (Norwegian Met Office), more professionalised and less tense relations with private sector re-users (KNMI case), increased efficiency from doing away with internal charging and transaction costs (Australian cases, Koski, POPSIS).

## 1 POLLOCK STUDY

 <b>The Economics of Public Sector Information Study</b> 	
<i>Introduction</i>	This summary is based on the study ' <i>The Economics of Public Sector Information</i> ' by <b>Rufus Pollock</b> . It uses mathematical analysis to assess who should finance PSI re-use and the regulatory structure needed. <b>Central message:</b> Marginal costs charging works, backed up by appropriate regulation.
<i>Context</i>	<ul style="list-style-type: none"> <li>➤ The Study focuses on digital, non-personal and upstream PSI. The types of data considered are large and coherent datasets rather than individual pieces of data. It proceeds on the basis that marginal costs are zero when the information is digital. Transaction and transition costs are not included in the welfare analysis.</li> <li>➤ Elasticity of demand estimates are drawn from national experiences of improving re-use conditions.</li> <li>➤ When assessing welfare, the study takes account of the fact that PSI is often sold to intermediaries rather than direct consumers and the positive effect of new products and services.</li> </ul>
<i>Key Findings</i>	<ul style="list-style-type: none"> <li>➤ The evidence on price elasticity is limited, and its value will be determined by the nature of the product at issue. Nevertheless, the study estimates that elasticity is generally greater than 1, and the range for the kinds of products that are the subject of this study is between 0.5-2.5.</li> <li>➤ Given that the estimated elasticity of demand for digital, upstream data is greater than 1, marginal cost pricing is found to be preferable.</li> <li>➤ Good reasons for pricing at marginal cost or below include the following: <ul style="list-style-type: none"> <li>- Average costs distort the market because there is usually a high mark-up to cover costs;</li> <li>- Demand for digital PSI is likely to be high and growing and average costs may hinder innovation.</li> <li>- Competition increases as public sector monopoly on data is removed.</li> <li>- Governments are already providing large contributions to fixed costs; the public should enjoy the benefits of that contribution.</li> </ul> </li> <li>➤ For those legally required to update registers ('updaters'), rather than 'users' of PSI, an above marginal costs pricing model is preferable: elasticity of demand is less than 1 and there are no systematic distortions of 'updaters' willingness to pay.</li> <li>➤ To prevent market abuses and regular funding changes, public bodies in control of PSI should be regulated transparently, independently.</li> </ul>
<i>PSI Domain</i>	Digital, non-personal and upstream PSI.
<i>Years of measurements</i>	Mathematical analysis is based on evidence from a wide range of previous (peer) studies.
<i>Year of publication</i>	2009
<i>Source(s)</i>	<a href="http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe0920.pdf">http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe0920.pdf</a>

	<b>Review of Recent Studies on PSI re-use and related market developments</b>   
<i>Introduction</i>	<p>This summary is based on the study ‘<i>Review of Recent Studies on PSI re-use and related market developments</i>’ by <b>Graham Vickery</b> (former OECD economist) of Information Economics on behalf of the European Commission. <b>Central message:</b> In European PSI is a large untapped economic potential</p>
<i>Context</i>	<ul style="list-style-type: none"> <li>➤ Since 2006 the PSI Directive has been fully transposed in the Member States, some of which have implemented deployment measures to improve PSI reuse, and new products and services based on PSI and similar digitisable information have been developed.</li> <li>➤ Consequently, the study uses recent studies to reassess and update 2006 estimates for the value of the PSI reuse market in the EU. Estimates for market size and total market impact were derived by pro-rating sectoral and national estimates up to EU27 totals, based on national to EU27 ratios for GDP, computer services spending or government ICT spending.</li> </ul>
<i>Key Findings</i>	<ul style="list-style-type: none"> <li>➤ Across 27 EU Member States, overall economic gains from facilitating re-use of PSI for free or on a marginal cost level are estimated as up to €40 billion.</li> <li>➤ The total direct and indirect economic impact of PSI reuse within the EU27 is estimated around €140 billion per year. Total economic impact estimates varied between €70-140 billion (based on 2006-07 estimates for Australian spatial PSI) and €128.5 billion (based on 2008 estimates for spatial PSI in New Zealand). In contrast, direct revenues to governments from PSI sales are estimated at around €1.4 billion per year.</li> <li>➤ Welfare gains made by moving from an average cost or cost recovery pricing model to marginal cost pricing amount to €40 billion (based on 2011 estimates for marginal cost PSI in the UK and removal of market barriers).</li> <li>➤ The size of the 2010 EU PSI market was estimated at around €32 billion (based on 2008 estimates for Dutch geo-information PSI). However, other estimates based on UK geographic data, German geo-information and the Spanish PSI sector are smaller: between €7 billion, €8.3 billion and €6.7 billion</li> <li>➤ Savings from improving access to the PSI required to undertake EU Environmental Impact Assessments and Strategic Environmental Assessments at national and sub-national level are estimated at around €2 billion per year.</li> <li>➤ Recurring annual gains in relation to accessible research results (based on a 5% increase in accessibility and efficiency) are estimated to be €6 billion.</li> </ul>
<i>PSI Domain</i>	General PSI
<i>Years of measurements</i>	2006 – 2011
<i>Year of publication</i>	2011
<i>Source(s)</i>	<a href="http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/psi_final_version_formatted.docx">http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/psi_final_version_formatted.docx</a>

 <b>Pricing of Public Sector Information Study' Study</b>      	
<i>Introduction</i>	The 'Pricing of Public Sector Information Study' ( <i>POPSIS study</i> ) was prepared by <b>Deloitte and others</b> under an assignment of the European Commission. It assesses models of supply and charging for PSI and implications of price changes. <b>Central message:</b> 21 case studies in the major PSI domains proving positive effects of marginal costs model can not be wrong
<i>Context</i>	This Study assesses different models of supply and charging for PSI and their effects through the analysis of 21 case studies. The cases cover a wide range of public sector bodies and different PSI sectors (meteorological data, geographical data, business registries and others) across Europe. It examines the charging practices, ranging from zero and marginal cost models to partial and full cost-recovery regimes. The analysis focuses on the effects of PSI charging models on the downstream market, PSI re-users, end-users and impacts on the PSB itself.
<i>Key Findings</i>	<ul style="list-style-type: none"> <li>➤ The case studies show a clear trend towards lowering charges and/or facilitating re-use (16 out of the 21 cases).</li> <li>➤ Where cost-recovery regimes are applied, the calculation basis for setting PSI re-use charges is weak, oriented towards filling budgetary gaps.</li> <li>➤ PSI re-use revenues of PSBs range from relatively small to extremely small when compared to the total budget of the PSB concerned. In half of the cases, these revenues constitute less than 1% of the PSBs' entire budget.</li> <li>➤ Based on their own raw data, the number of PSBs that exploit added-value products is limited (seven out of 21 cases) and appears to be decreasing.</li> <li>➤ In those cases where PSBs moved to marginal and zero cost charging or cost-recovery that is limited to re-use facilitation costs only: <ul style="list-style-type: none"> <li>○ The number of re-users increased by between 1,000% and 10,000%, attracting new types of re-users, in particular SMEs.</li> <li>○ Demand volumes expand strongly (up to 7,000%), where costs do hardly increase. Once re-use facilitation processes are properly organized, they become sub-routines within the PSB.</li> <li>○ In some cases, PSI sales revenues can remain stable or even increase after drastic price cuts due to the growing demand.</li> <li>○ Zero cost pricing has the additional advantage that transaction costs decrease significantly. This decrease applies not only to administrative costs, such as invoicing, but also to costs related to the monitoring of compliance with license arrangements.</li> <li>○ Intensified ties PSB-re-users create better data quality and efficiency.</li> </ul> </li> </ul>
<i>PSI Domain</i>	General PSI
<i>Years of measurements</i>	2006 – 2011
<i>Publication</i>	2011
<i>Source(s)</i>	<a href="http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/models.pdf">http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/models.pdf</a>

	<h2 style="text-align: center;">Does Marginal Cost Pricing of Public Sector Information Spur Firm Growth?</h2> 
<i>Introduction</i>	This summary is based on the study ' <i>Does Marginal Cost Pricing of Public Sector Information Spur Firm Growth?</i> ' by <b>Dr. H. Koski, of ETLA</b> – The Research Institute of the Finnish Economy. <b>Central message:</b> First layer re-users benefitting from marginal costs charging, grow 15% faster than those not enjoying such benefits.
<i>Context</i>	<ul style="list-style-type: none"> <li>➤ The study assessed 14,000 firms in the architectural, engineering and related technical consultancy sectors, located in 15 different countries<sup>3</sup>, some operating maximum marginal cost pricing models, others cost-recovery pricing models.</li> <li>➤ Industries in these sectors make significant use of geographical information, and may also supply services requiring geographical information, e.g. digital mapping, navigation and map data solutions.</li> <li>➤ The study analysed the effect of maximum marginal cost pricing for geographical PSI on the firms' growth performance, measured by reference to the firms' real sales growth over a particular time period, taking into account the effect of the availability of geographical PSI (e.g. the use of web portals); the price of such data; and whether it was gathered and managed by a nationally responsible department or body.</li> <li>➤ Changes in national PSI policy included               <ul style="list-style-type: none"> <li>○ Reducing prices of Digital Cadastral Maps by up to 97% (Austria)</li> <li>○ A free web portal for essential cadastral geographic data (Spain)</li> <li>○ A free web portal for spatial data (Australia)</li> </ul> </li> </ul>
<i>Key Findings</i>	<ul style="list-style-type: none"> <li>➤ The average annual growth rate was about 15% higher amongst firms located in countries with maximum marginal cost pricing for geographical PSI compared to those operating on a full or partial cost recovery basis.</li> <li>➤ Changing to marginal cost pricing had the greatest impact on SMEs:               <ul style="list-style-type: none"> <li>○ It substantially contributed to the sales growth of SMEs, but did not have a significant impact on the sales growth of larger firms; and</li> <li>○ SMEs increased sales growth by 7% on average after one year and 19% on average after two.</li> </ul> </li> </ul>
<i>PSI Domain</i>	Geographic information in the architectural, engineering and related technical consultancy sectors.
<i>Years of measurements</i>	2000-2007 where possible; 2003-2007 otherwise.
<i>Year of publication</i>	2011
<i>Source(s)</i>	<a href="http://www.etla.fi/files/2696_no_1260.pdf">http://www.etla.fi/files/2696_no_1260.pdf</a>

<sup>3</sup> Australia; Austria; Czech Republic; Denmark; Finland; France; Germany; Italy Netherlands; Norway; Poland; Portugal; Spain; Sweden; the United Kingdom ; and the United States of America.

	<h2 style="text-align: center;">Models of Public Sector Information Provision via Trading Funds</h2> <div style="text-align: right;">       </div>
<p><i>Introduction</i></p>	<p>This summary is based on the study ‘<i>Models of Public Sector Information Provision via Trading Funds</i>’, by <b>Newbery, Bently and Pollock</b> commissioned by the United Kingdom’s Department for Business, Enterprise and Regulatory Reform and HM Treasury. The study uses mathematical analysis. <b>Central message:</b> Providing UK Key Registers’ data against marginal costs, demonstrate overall and convincing welfare effects</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ The study provides estimates for the costs and benefits of marginal cost pricing in relation to bulk, digital PSI data from the Met Office, Ordnance Survey, the UK Hydrographic Office, the Land Registry, Companies House and the Driver Vehicle Licensing Agency (DVLA).</li> <li>➤ The study uses prior experiences of agencies adopting marginal cost pricing</li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ Elasticity of demand varies depending on the PSI, but for the products associated with the PSI, average elasticity was estimated at between 1–2.</li> <li>➤ The average time delay for the effects to take place is 1.5 years.</li> <li>➤ Overall welfare increases when marginal cost pricing models are used: <ul style="list-style-type: none"> <li>○ <b>By Companies House</b> for CD ROM and Bulk Data and Image products: estimated net welfare gain is around €2.3 million.</li> <li>○ <b>By the Met Office</b> for wholesale products net welfare gain of €1.3 million, with investment returns of approximately 500%.</li> <li>○ <b>By Ordnance Survey</b> for Large Scale Topographic and Transport Network products: estimated net welfare gain is around €194 million. Estimated €85 million cost to government would be reduced by increased tax income and introduction of a subsidy to spread costs across departments.</li> <li>○ By the <b>Hydrological Office</b> for Digital UK Charts, Digital Publications and Licensing products: estimated net welfare gain is around €429,000.</li> <li>○ By the <b>Land Registry</b> for Property Price data and Polygon Geographic Information System data: estimated net welfare gain is €1.5 million. Due to a limited amount of information no figures were estimated for bulk data downloads, but significant overall welfare gains were estimated.</li> <li>○ By the <b>DVLA</b> for anonymised, bulk data and mileage data: estimated net welfare gains is around €4.6 million. The relative inelasticity of demand for registrations may permit financing from increased registration fees.</li> </ul> </li> <li>➤ Registration based entities may be able to make up revenue losses through changes to registration charging policy. Non-registration based entities would require additional government funding.</li> <li>➤ Establishing an adequate regulatory regime is of crucial importance</li> </ul>
<p><i>PSI Domain</i></p>	<p>Company Register, Land Registry, Met Data, Hydro Data, Vehicle data, OS data.</p>
<p><i>Years of measurements</i></p>	<p>Evidence for mathematical analysis taken from sources from 1996 onwards.</p>
<p><i>Year</i></p>	<p>2008</p>
<p><i>Source(s)</i></p>	<p><a href="http://www.berr.gov.uk/files/file45136.pdf">http://www.berr.gov.uk/files/file45136.pdf</a></p>

	<h2 style="text-align: center;">PSI in European Meteorology – an Unfulfilled Potential</h2> 
<i>Introduction</i>	<p>This summary is based on the study '<i>PSI in European Meteorology – an Unfulfilled Potential</i>' by <b>Richard Pettifer</b>, Chairman of the Association of Private Meteorological Services (PRIMET). <b>Central message:</b> NMHS market activities create tremendous detrimental effects</p>
<i>Context</i>	<ul style="list-style-type: none"> <li>➤ The study assesses the way in which meteorological PSI is exploited in Europe, and compares the estimated market and growth in the US and EU.</li> <li>➤ It proceeds on the basis that, in general, meteorological PSI is available on a cost-recovery basis in Europe and on marginal or zero cost bases in the US.</li> </ul>
<i>Key Findings</i>	<ul style="list-style-type: none"> <li>➤ Cost recovery pricing in Europe may be distorting the market: <ul style="list-style-type: none"> <li>○ National Meteorological and Hydrological Services (NMHS) are monopoly wholesalers to their competitors on the value-added products market;</li> <li>○ NMHS may restrict re-use and adopt complex licensing systems; and</li> <li>○ Cost recovery pricing may raise data costs to such an extent that commercial re-use is economically impossible.</li> </ul> </li> <li>➤ If PSBs must maximise their PSI sales revenue, they may have to employ complex licensing regimes that are expensive to manage.</li> <li>➤ Where NMHS provide free (often low quality) value-added products, opportunities for low-end commercial re-use are low, particularly for SMEs.</li> <li>➤ The European market in value-added meteorological products is estimated around €530 million per year; the end user market for weather related services is estimated around €2 x 10<sup>11</sup> per year. Therefore, only 0.3% of the European market is being supplied, compared to estimates of 0.7% in the US.</li> <li>➤ Since 2006, overall market growth in Europe has been less than 2%, with: <ul style="list-style-type: none"> <li>○ The 28% private sector share growing at around 25% per year; and</li> <li>○ The 75% NMHS share declining by around 1.5% per year.</li> </ul> </li> <li>➤ If meteorological PSI was provided on a marginal cost basis throughout Europe and the market became as well penetrated at that in the US, then the actual market size would be around €1,390x10<sup>6</sup> per year; net revenue to EU central treasuries would increase by around €290x10<sup>6</sup> per year.</li> <li>➤ Moving forward, the study suggests that: <ul style="list-style-type: none"> <li>○ At the least, there should be complete, clear and public accounting between the commercial arms of NMHS and its parent agency, and that, at best, there should be complete technical and economic separation</li> <li>○ States should be involved with regulating both the quality of PSI and its reuse on the market, particularly due to the safety implications</li> </ul> </li> </ul>
<i>PSI Domain</i>	Meteorological Information
<i>Years of measurements</i>	Relies on data from various studies published from 2002
<i>Year</i>	2011
<i>Source(s)</i>	<a href="http://www.primet.org/documents-mainmenu-29/424-psi-in-european-meteorology-an-unfulfilled-potential">http://www.primet.org/documents-mainmenu-29/424-psi-in-european-meteorology-an-unfulfilled-potential</a>

## 7 SPANISH CADASTER CASE

	<h3>Spanish Cadaster case</h3> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in a Finnish study (<i>Does marginal cost pricing of Public Sector Information Spur Firm Growth?</i> <b>By Heli Koski, ETLA</b>) that assessed 14,000 firms in the architectural, engineering and related technical consultancy sectors, located in 15 different countries, analysing the effect of maximum marginal cost pricing for geographical PSI on the firms' growth performance. Further information on this case has been drawn from the European Commission's <b>2011 POPSIS study</b> ('Pricing Of Public Sector Information').  <b>Central message:</b> Scale of effects following free re-use prove dormant need</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ Since 2003, the Spanish <i>Oficina del Catastro</i> (the Spanish Cadastre/Land Registry) has put increasing amounts of geographical data online and, from 2010, has facilitated electronic land registry certification.</li> <li>➤ From June 2004, free access to cadastral maps for non-commercial users was provided through the online portal <i>IDEE</i> (in English, the 'Spatial Data Infrastructure Portal'). In April 2011 free access was also extended to commercial re-users, and a new model allowed mass downloads.</li> <li>➤ The Spanish Cadastre runs regular training sessions for users of the portal, to increase awareness and gain feedback.</li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ From 2004-05, cartography data consultations increased by about 700%. In 2010, the increase compared to 2004 was over 25 fold.</li> <li>➤ From a cost-benefit analysis, estimates for savings to the Spanish tax-payers from the online access and digital certification range from 8 - 15 million euro per year (RSO/CapGemini estimate from 2009 respectively KPMG estimate from 2010).</li> <li>➤ Since obtaining free access in 2011: <ul style="list-style-type: none"> <li>- The number of private companies downloading data increased 15 fold;</li> <li>- Alphanumeric data download volume per week increased 20 fold;</li> <li>- Total digital map downloads increased by a factor of 80, (275 to 2,101);</li> <li>- Total downloads increased by 100 fold, from 342 to over 3,300.</li> </ul> </li> <li>➤ 'Traditional' re-users have included estate agents, government departments, businesses commercialising PSI products and services, organisations and citizens using PSI for non-commercial purposes.</li> <li>➤ There has also been an increase in re-use by 'non-traditional' entities. One example is SME's selling swimming pool products targeting only those households having a swimming pool.</li> </ul>
<p><i>PSI Domain</i></p>	<p>Geographic Information</p>
<p><i>Years of measurements</i></p>	<p>From 2004</p>
<p><i>Year of publication</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://www.etla.fi/files/2696_no_1260.pdf">http://www.etla.fi/files/2696_no_1260.pdf</a>  <a href="http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf">http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf</a></p>

## 8 AUSTRIAN GEOGRAPHIC DATA CASE

 	<h3 style="text-align: center;">Austrian Geographic Data case</h3> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in a Finnish study (<i>Does marginal cost pricing of Public Sector Information Spur Firm Growth?</i> By Heli Koski, ETLA) that assessed 14,000 firms in the architectural, engineering and related technical consultancy sectors, located in 15 different countries, analysing the effect of maximum marginal cost pricing for geographical PSI on the firms' growth performance and the European Commission's <b>2011 POPSIS study</b> ('Pricing Of Public Sector Information') performed by Deloitte and others. <b>Central message:</b> Positive price elasticity of demand allow for increase in turn over following a drop in re-use charges</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ In 2006 the Austrian Federal Office of Metrology and Surveying <i>Bundesamt für Eich- und Vermessungswesen</i> (BEV) made changes to its geographic data provision by:             <ul style="list-style-type: none"> <li>○ Moving from a pricing structure based on analogue products to one based on digital products;</li> <li>○ Changing its cost-recovery pricing to marginal cost pricing model.</li> </ul> </li> <li>➤ The prices of various key data sources - e.g. digital cadastral maps - were reduced by up to 97%, without additional government funding.</li> <li>➤ The pricing regime has been subject to regular reviews and alterations (in 2008 and 2010), based on PSI market value, prices of foreign public sector bodies for comparable datasets, re-use business conditions, federal government budget constraints, costs of production and re-use facilitation.</li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ The changes are likely to have aided:             <ul style="list-style-type: none"> <li>○ The substantial increase in number of datasets sold:                 <ul style="list-style-type: none"> <li>- In 2007, sales of cartographic products increased by 200%–1,500%, digital orthophotos by 7,000%, digital cadastral maps by 250%, digital elevation mode maps by 250%, digital landscape models by 1,000%, and external-use licenses by 100%.</li> <li>- This increased demand came mostly from Austrian SMEs.</li> </ul> </li> <li>○ The 46% increase in total revenue from sales of geographic data.</li> <li>○ The rise in data sought by new user groups, e.g. geo-marketing, location-based services and health services firms.</li> <li>○ The increase in demand for data from international customers.</li> </ul> </li> <li>➤ In 2011, purchase orders had stabilised after an initial strong growth period. But, customer numbers and external license numbers are still rising.</li> </ul>
<p><i>PSI Domain</i></p>	<p>Geographic Information</p>
<p><i>Years of measurements</i></p>	<p>From 2006</p>
<p><i>Year of publication</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://www.etla.fi/files/2696_no_1260.pdf">http://www.etla.fi/files/2696_no_1260.pdf</a>  <a href="http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf">http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf</a></p>

## 9 AUSTRALIAN SPATIAL DATA CASE

	<h3>Australian spatial data case</h3> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in an Australian study <i>Costs and Benefits of Data Provision - Report to the Australian National Data Service, By John Houghton from Victoria University</i> that explores the economic impact of free PSI access and the costs and benefits. Further information on the case has been drawn from the 2010 'ANZLIC - The Spatial Information Council Economic Assessment of Spatial Data Pricing and Access' by PwC. <b>Central message:</b> Welfare effects of free re-use are convincing, as well as the efficiency gains from saving transaction costs</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ From 2002, spatial data has been made available as follows: <ul style="list-style-type: none"> <li>○ Online spatial data – free of charge</li> <li>○ Packaged spatial data – marginal cost of transfer</li> <li>○ Customised spatial data - price not exceeding the cost of transfer.</li> </ul> </li> <li>➤ No restrictions on commercial use or value-added activities imposed.</li> <li>➤ From 2009 data are under a Creative Commons licensing framework.</li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ For the year 2009-10, free access to Geoscience Australia topographical data was estimated to have increased welfare by \$4.7million per annum: data production costs were around \$13.3million with the benefit for government and private users being around \$10million per annum and \$8million respectively.</li> <li>➤ Given the annual Australian government expenditure on fundamental spatial data of around \$70 million, free access to such spatial PSI is estimated to improve welfare by around \$25million per annum.</li> <li>➤ For the period 2001-02 to 2005-06: <ul style="list-style-type: none"> <li>○ Free access led to an estimated annual consumer surplus increase of around \$60 million;</li> <li>○ There was a good elasticity of demand, with downloads increasing by up to 172% per annum;</li> <li>○ Average social returns on expenditure were estimated at \$15million per annum.</li> </ul> </li> <li>➤ Free re-use led to departmental transaction cost savings between 17% - 33% of respective revenues; conversely, transaction-related cost savings for PSI re-users were at around \$1.7million per annum.</li> </ul>
<p><i>PSI Domain</i></p>	<p>Geospatial Data</p>
<p><i>Years of measurements</i></p>	<p>2001-02 to 2005-06; and 2009-2010</p>
<p><i>Year of publication</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://ands.org.au/resource/houghton-cost-benefit-study.pdf">http://ands.org.au/resource/houghton-cost-benefit-study.pdf</a>  <a href="http://www.crcsi.com.au/Documents/ANZLIC-Economic-Study---Stage-2-Report.aspx">http://www.crcsi.com.au/Documents/ANZLIC-Economic-Study---Stage-2-Report.aspx</a></p>

	<h2 style="text-align: center;">Pricing of PSI in the Meteorological Sector blocks market development</h2> 
<i>Introduction</i>	This summary is based on the Position Paper ' <i>Pricing of PSI in the Meteorological Sector blocks market development</i> ' by <b>Richard Pettifer</b> , Chairman of the Association of Private Meteorological Services (PRIMET). <b>Central message:</b> Own exploitation by NMHS creates huge entry barriers for SMEs
<i>Context</i>	<ul style="list-style-type: none"> <li>➤ Notes at the outset that meteorological data is PSI well suited to being exploited for commercial purposes: it is well known, accessible and produced in an international format that facilitates quality control, easy exchange, comprehension and use. Commercial exploitation of meteorological PSI requires data from a number of states or geographical regions.</li> <li>➤ The study considers three hypothetical SMEs, in Luxembourg, Poland and France that provide weather-related services relating to forecasting, highways and energy, and uses 2010 prices on a cost-recovery basis.</li> </ul>
<i>Key Findings</i>	<ul style="list-style-type: none"> <li>➤ SMEs cannot operate successfully or compete with large firms when partial or full cost-recovery pricing principles are used: cost-recovery pricing principles are likely to create barriers to market entry because SMEs are likely to be unable to find the 20 contracts required to operate profitably.</li> <li>➤ The absolute minimum PSI meteorological data required to provide basic weather-related services, with a market value of €6,000 to €20,000 per contract, would cost a typical SME between €84,000 and €400,000.</li> <li>➤ The loss of revenue from providing meteorological PSI on a marginal cost rather than a cost-recovery basis is significantly less than the estimated additional tax revenue on resulting weather-related services.</li> <li>➤ If meteorological PSI was provided on a marginal cost basis so that the market became as well penetrated at that in the US, the estimated gross overall tax revenue from this weather-related sector would increase by around €340.000.000;</li> <li>➤ Market growth in the weather-related services sector is 15.8% greater in the US, where meteorological pricing is based on marginal cost principles, than in Europe, where cost-recovery principles are generally used.</li> </ul>
<i>PSI Domain</i>	Meteorological Information
<i>Years of measurements</i>	2002 – 2010
<i>Year of publication</i>	2011
<i>Source(s)</i>	<a href="http://share-psi.eu/papers/primet.pdf">http://share-psi.eu/papers/primet.pdf</a>

## 11 NORWEGIAN METEOROLOGICAL OFFICE CASE

	<h3>Norwegian Met Office case</h3> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in the ‘Pricing of Public Sector Information Study’ (<i>POPSIS study</i>) prepared by <b>Deloitte and others</b> for the European Commission. It assessed models of supply and charging for PSI and implications of price changes. <b>Central message:</b> Welfare effects of free re-use are convincing, as well as the side benefits (good relations with public and re-users).</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ In 2007 the Norwegian National Meteorological Institute (Met.no) made all weather data held by it, including certain datasets from other national met offices, freely available for access and re-use. <ul style="list-style-type: none"> <li>○ The shift to a zero cost pricing model was mostly financed by government compensation of €125,000, with the remaining small amount of transition costs covered by Met.no’s own resources.</li> <li>○ Data is downloaded on a Creative Commons basis.</li> <li>○ Only re-users seeking guaranteed data, for example, full-time availability must pay a fee (currently €5,750 per year).</li> </ul> </li> <li>➤ In 2008 Met.no launched a free online portal - yr.no – which provides graphic displays of Norwegian and European weather forecasts.</li> <li>➤ Met.no still has a commercial arm but this policy is currently under review.</li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ The free and open access to this PSI is likely to have aided: <ul style="list-style-type: none"> <li>○ The average 300-fold increase in the number of re-users, from around 100 to 3,000 unique re-users per week;</li> <li>○ The 200% increase in re-user turnover; and</li> <li>○ The entry of re-users into high end international data provision markets, normally dominated by national met offices.</li> </ul> </li> <li>➤ Since 2007 the composition of the re-user mix has changed, with: <ul style="list-style-type: none"> <li>○ A 40% increase in the number of re-users from outside of Norway;</li> <li>○ New categories of re-user, including SMEs that integrate the data into other media content or use it to develop ‘apps’.</li> </ul> </li> <li>➤ Increased interaction with re-users/taxpayers have led to: <ul style="list-style-type: none"> <li>○ Improvements in data quality through re-user feedback (Met.no receives over 5,000 e-mails each year from citizens);</li> <li>○ Increased professionalism in service delivery;</li> <li>○ Improved internal process efficiency; and</li> <li>○ Excellent public relations (Met.no has received awards for being the most respected public agency for five consecutive years).</li> </ul> </li> <li>➤ Tax returns on PSI re-use have increased by at least 100% and exceed revenue loss and the slight uncovered re-use facilitation costs.</li> </ul>
<p><i>PSI Domain</i></p>	<p>Meteorological Data</p>
<p><i>Years of measurements</i></p>	<p>2007-2010</p>
<p><i>Year</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf">http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf</a></p>

## 12 DUTCH METEOROLOGICAL DATA CASE

	<h3>Dutch Meteorological Data case</h3> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in the ‘Pricing of Public Sector Information Study’ (<i>POPSIS study</i>) prepared by <b>Deloitte and others</b> for the European Commission. It assessed models of supply and charging for PSI and implications of price changes. <b>Central message:</b> Tax gains following increased economic activities resulting from cut re-use charges outweigh the loss of PSB income by far</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ In 1999 the Royal Netherlands Meteorological Institute <i>het Koninklijk Meteorologisch Instituut</i> (KNMI) decided to cease all its commercial activities and encourage PSI re-use. Accordingly:           <ul style="list-style-type: none"> <li>○ It approaches PSI provision for re-use as a public task;</li> <li>○ it switched from a full cost-recovery pricing model to recovery of re-use facilitation costs only; consequently, the re-use system is self-financing;</li> <li>○ the price of the full KNMI dataset has decreased by 80%.</li> <li>○ Its commercial arm was reorganised to facilitate privatisation; this was financed by public funding;</li> <li>○ It does not enrich PSI beyond what is necessary to allow re-use by public and private re-users alike or produce ‘value-added’ products; and</li> <li>○ Data provision for academic purposes is on a marginal cost basis, provided that the results of the research are made publically available.</li> </ul> </li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ Easier access to PSI has led to the creation of a competitive and innovative private weather market</li> <li>➤ The 1999 policy changes likely aided:           <ul style="list-style-type: none"> <li>○ The 400% increase in turnover for private sector re-users;</li> <li>○ An 250% increase in high-end users;</li> <li>○ A rise in the employment activity of re-users of 300%;</li> <li>○ An increase of over €35 million on corporate tax returns;</li> <li>○ The rise of new business models, offering free services to the public paid through advertising and innovative applications; and</li> <li>○ Improvements in data quality, professionalism in service delivery, and internal process efficiency gains of €3.5 million through intensified use and feedback from re-users.</li> </ul> </li> </ul>
<p><i>PSI Domain</i></p>	<p>Meteorological Data</p>
<p><i>Years of measurements</i></p>	<p>1999-2010</p>
<p><i>Year of publication</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf">http://ec.europa.eu/information_society/policy/psi/docs/pdfs/report/11_2012/summary.pdf</a></p>

### 13 AUSTRALIAN STATISTICAL DATA CASE

	<h2 style="text-align: center;">Australian statistical data case</h2> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in an Australian study <i>Costs and Benefits of Data Provision - Report to the Australian National Data Service, By John Houghton from Victoria University</i> that explores the economic impact of free PSI access and the costs and benefits. <b>Central message:</b> Welfare effects of free re-use are convincing, as well as efficiency gains.</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ From 2005, all publications and data produced by the Australian Bureau of Statistics (ABS) have been freely available online.</li> <li>➤ Between 2005 - 2008 data was made available on a restricted licence basis; since 2008 all data has been under a Creative Commons (CC) licensing framework.</li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ The cost for the ABS to make statistical data freely available using CC licensing is estimated as around \$3.5 million per year.               <ul style="list-style-type: none"> <li>○ Savings from staff costs for subscription operations, customer support services and processing transaction fees are around \$945,000.</li> <li>○ Lost ABS revenue from sales and consultancy are around \$4.5 million.</li> <li>○ The CC licensing framework has led to estimated internal gains of \$56,667 per year: the framework has low, absorbable, running costs and revenue forgone has been roughly equal to internal savings.</li> </ul> </li> <li>➤ However, total user savings are estimated at around \$5 million per year. This figure takes account of savings on data and license costs, transactional costs, bank costs and time.</li> <li>➤ There was a 34% increase in website traffic in the first year of free statistical data. Product downloads more than trebled between 2003–2010.</li> <li>➤ Welfare gains have been estimated at around \$4 million per year.               <ul style="list-style-type: none"> <li>○ This figure is based on the consumer surplus in relation to 3-year average intensity of use for 2003-04, 2005-06 and 2006-07 to 2008-09.</li> <li>○ Due to a lack of information on additional government funding to ABS, this figure does not account for deadweight loss. However, this is estimated to be small since the government is a major user of ABS data.</li> </ul> </li> </ul>
<p><i>PSI Domain</i></p>	<p>Statistical Data</p>
<p><i>Years of measurements</i></p>	<p>2003 – 2010</p>
<p><i>Year of publication</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://ands.org.au/resource/houghton-cost-benefit-study.pdf">http://ands.org.au/resource/houghton-cost-benefit-study.pdf</a></p>

## 14 AUSTRALIAN HYDROLOGICAL DATA CASE

	<h3>Australian hydrological data case</h3> 
<p><i>Introduction</i></p>	<p>This case was spotlighted in an Australian study <i>Costs and Benefits of Data Provision - Report to the Australian National Data Service</i>, <b>By John Houghton from Victoria University</b> that explores the economic impact of free PSI access and the costs and benefits. <b>Central message:</b> Welfare effects of free re-use are convincing.</p>
<p><i>Context</i></p>	<ul style="list-style-type: none"> <li>➤ From 2008 the Australian Bureau of Meteorology (BOM) has published an annual National Water Account (NWA) that reports on: <ul style="list-style-type: none"> <li>○ Total water resources;</li> <li>○ The volume of water available for abstraction;</li> <li>○ The rights to abstract water; and</li> <li>○ The actual abstraction of water for economic, social, cultural and environmental purposes.</li> </ul> </li> <li>➤ Such information was previously difficult to access; in accordance with regulatory duties it is now provided to BOM by over 200 organisations holding water data.</li> <li>➤ The NWA contains information in standardised forms, is freely available online and is made available within a Creative Commons (CC) licensing framework. <ul style="list-style-type: none"> <li>○ Following BOM encouragement, in 2011 all but nine data providers had not yet committed to applying CC licensing to the data supplied to BOM.</li> </ul> </li> </ul>
<p><i>Key Findings</i></p>	<ul style="list-style-type: none"> <li>➤ Water data is used extensively when made readily and freely available online: <ul style="list-style-type: none"> <li>○ Prior to the introduction of the VWDW, an average 400 information requests were made per year; since 2004 the VWDW has had an average 443,000 data requests per year.</li> <li>○ From 2005 to 2010 data extractions for re-use have doubled, from 68,908 to 102,536.</li> </ul> </li> <li>➤ Open access to information may have been a factor facilitating the emerging market in water entitlements and allocations that had a value of \$2.8 billion in 2009-10.</li> <li>➤ Since 2007-08, the equity of the Australian water market has doubled in value (from around \$1.5 million to \$3 million); improved information on water entitlements, allocations, trade volumes and trade prices is suggested as a factor in this.</li> </ul>
<p><i>PSI Domain</i></p>	<p>Hydrological Data</p>
<p><i>Years of measurements</i></p>	<p>2005 – 2011</p>
<p><i>Year</i></p>	<p>2011</p>
<p><i>Source(s)</i></p>	<p><a href="http://ands.org.au/resource/houghton-cost-benefit-study.pdf">http://ands.org.au/resource/houghton-cost-benefit-study.pdf</a></p>