

COMMENTARY:

Emergence of the carbon-market intelligence sector

Mark Maslin and Martyn Poessinouw

The newly observed economic phenomenon carbon-market intelligence was worth over £35 billion in 2010–2011 and is forecast to experience annual double-digit growth over the next five years.

The carbon-market intelligence (CMI) sector provides information to help organizations sell or purchase local, national and regional carbon-based credits, for legal compliance, and understand their own internal carbon footprint. In 2010–2011 CMI was worth over £35 billion (Fig. 1) and is forecast to experience annual double-digit growth over the next five years. CMI was first observed in 2007 as part of an economic research project into carbon-finance markets, which was part of a wider research programme into the global low-carbon economy¹. The carbon-finance market includes activities such as carbon-credits finance and fund management, carbon-credits trading and carbon project verification, as well as CMI. Carbon-credits trading is the most high profile and well-known of these activities and has been recognized as a major global market since the mid 1990s, with an estimated spend of £88 billion in 2010, of which the European Union's Emission Trading Scheme made up 85% (ref. 2). Carbon-credit trading now encompasses a very wide range of countries, companies and organizations, all of which have varying information needs around carbon markets. CMI has, therefore, now become a critical part of the carbon-finance market, creating a new 'industry' that is responsible for delivering the information required for the effective sale or purchase of carbon-based credits or other financial instruments. CMI includes a wide range of both pre- and post-trading activities such as carbon accounting, carbon disclosure, carbon footprinting, carbon monitoring and legal compliance. In 2009–2010, new baseline research was commissioned to define, measure and forecast the full range of CMI activities³. One recent application of this research has been to scope market demand for applications that monitor and map carbon changes using satellite and

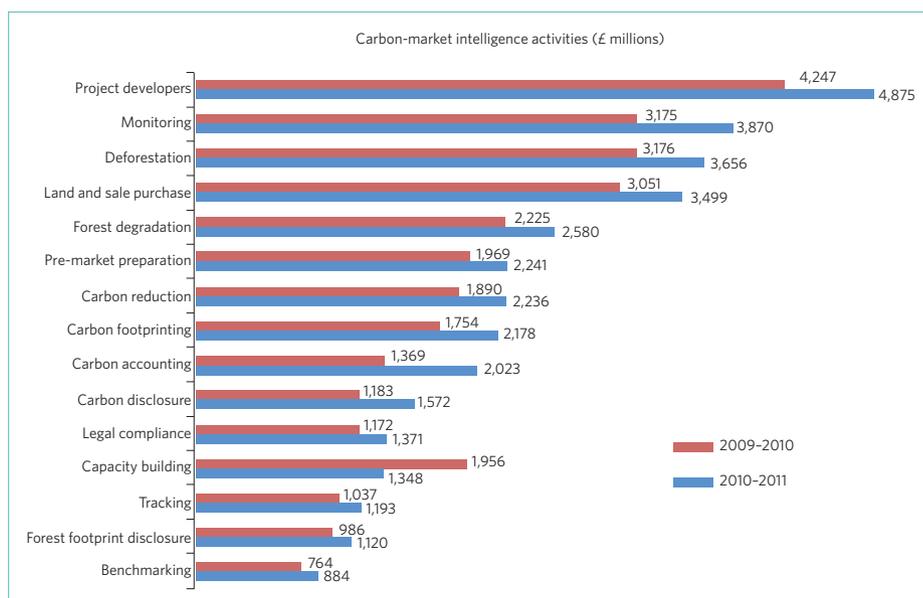


Figure 1 | Comparison of the global CMI activity between 2009–2010 and 2010–2011 in 15 different submarkets.

ground systems data⁴. This research has been fully updated for 2010–2011 and is presented here.

Quantifying a previously unobserved or emerging market is always challenging. With no definitive sources of data or analysis as a starting point, the key task is to identify meaningful and multiple sources of transactional (and other) data and use this to (1) construct and (2) populate a segmented model of the market that transforms the available evidence from singular and fragmented insights into structured observations. Much of this transactional data is in the public domain, although it requires the corroboration of multiple sources and triangulation between different sources (financial, legal, academic, industry, trade association, procurement, government,

and so on) before it can be validated and transformed into usable intelligence.

The CMI research was conducted using the Knowledge Matrix profiling system. This is based on a 25-year-long international research programme that started in Harvard University⁵ and was subsequently developed in countries across Europe. The profiling system is used to track technology and market change, and uses analytical data grids, business case studies and industry research to provide probabilistic and measurable evidence about how companies and economies (un)successfully adapt to changing market conditions. This data and research base is now recognized as one of the largest privately assembled sources of competitive information in Europe.

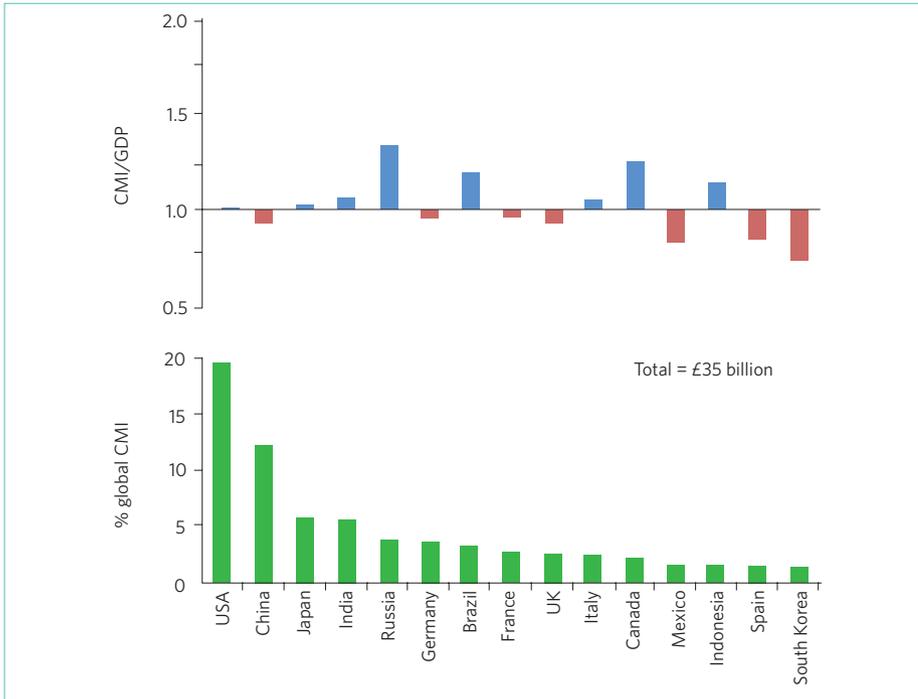


Figure 2 | Top 15 countries by value for total CMI activities as a percentage compared with the normalized data for each country using their specific GDP for 2010–2011. Blue bars represent a country's CMI is greater than predicted by their share of world GDP; red bars represent less than predicted.

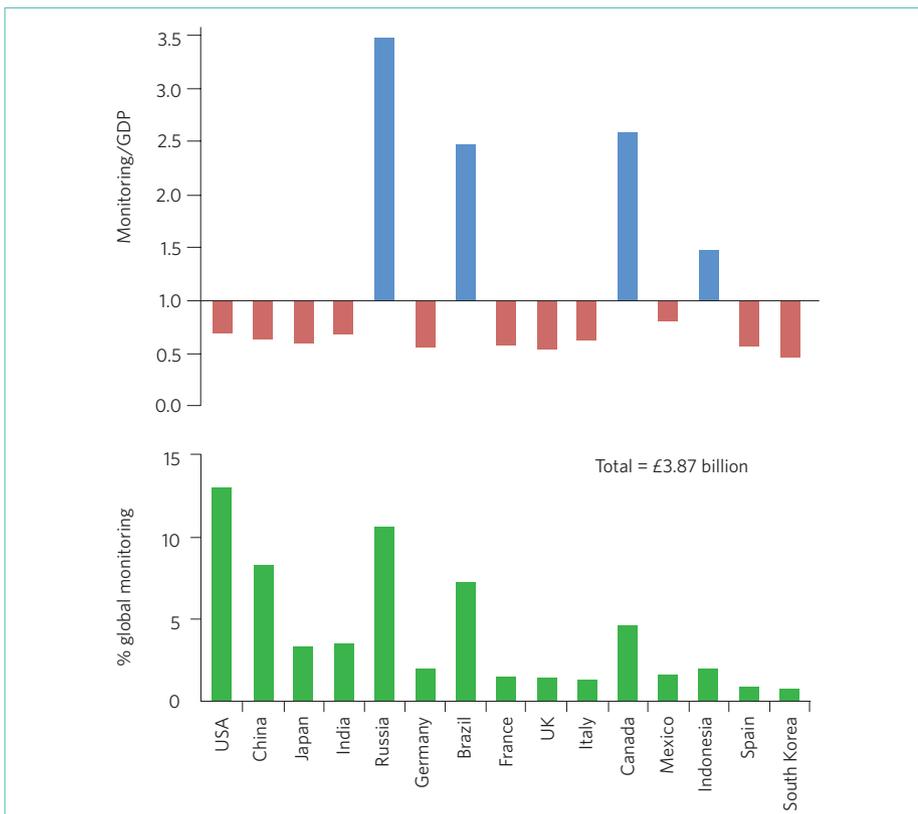


Figure 3 | Monitoring submarket shown for the top 15 CMI countries (Fig. 2) as a percentage compared with the normalized data for each country using their specific GDP for 2010–2011. Blue bars represent a country's monitoring CMI submarket share is greater than predicted by their share of world GDP; red bars represent less than predicted.

Knowledge Matrix has been developing the detailed methodology of how to define and quantify unobserved or 'difficult-to-measure' markets where standard data sources are non-existent, restricted, rapidly outdated or massively conflicting. To achieve this they have to be able to identify, evaluate, interpret and transform multiple data sources into new values and they use a rules-based approach to collecting, assessing, selecting and then managing these sources. In addition to CMI, this approach has been recently applied to environmental/low-carbon¹, digital media, climate/weather services⁶, new water technology and new nanotechnology markets, for a variety of clients, including governments, academia, financial and private sector.

Quality assurance within this research is an essential but complex process. It involves 'sense checking' by comparison with other more established but related markets and 'field testing' against specific market sources (in this case using direct access to funded country programmes and industry purchasing agents). Even then, the multiple data sources can provide a bewildering range of results, so each transformed market value is quoted with a 'confidence level'. The confidence level represents the difference between the mean value and the highest or lowest values from the final selection of sources and can vary according to the product or service, the measure (sales or growth) or the country. The overall target value is 85% or higher for established markets, but for CMI as a newly observed market the confidence level is around 80%, which we would expect to increase over time as more data becomes available, sources become more reliable and the track record for those sources is established.

The global CMI in 2010–2011 was worth over £35 billion and involved over 1.45 million individual financial transactions. We have divided the CMI into 15 submarkets (Fig. 1). Between 2009–2010 and 2010–2011, 14 out of the 15 submarkets increased in worth. The only one that showed a decrease was capacity building. The largest markets are those associated with the measurement and monetization of land carbon. In 2010–2011 this whole sector was worth over £16 billion, which was a +20% increase on the previous year. The break down is as follows: land-carbon monitoring was worth £3.87 billion (+21% on 2009–2010), measuring deforestation and forest degradation was worth £6.24 billion (+19%), forest footprint disclosure was worth £1.12 billion (+14%) and project developers spent £4.875 billion (+15%). However, it is clear that the amount paid for the data is highly variable. For example, estimating

the amount of land-carbon storage for a region can vary between £5 per km² and over £2,000 per km² (ref. 3). This is partly due to the different methodologies used such as satellite reflectance data, airborne Lidar, *in situ* tree measurements and simple data mining. It is also due to the amount that clients are prepared to pay and thus charged accordingly.

CMI is experiencing rapid growth. Our forecast in 2009–2010 was for an estimated growth of 15.1% in 2010–2011, rising to 18.3% in 2015–2016. In reality, growth in 2010–2011 was 15.7% (above forecast). Our forecast in 2010–2011 for the next five years shows an annual uplift over the previous forecast. Annual growth increases every year in our predictions ending up as 18.7% in 2015–2016. To put this growth in context, over the same period we would expect annual global growth in gross domestic product (GDP) to be 1–2%, hence our interest in CMI as a high-growth market.

The global CMI database can also be used to compare different countries. Fig. 2, using 2010–2011 data, takes the top 15 countries (by value in millions of pounds) for all CMI activities. Comparisons between countries can be made by normalizing the CMI using the countries individual GDP. This analysis shows that the country market share for CMI broadly reflects market share of GDP. This result is not surprising given the broad similarities in the industrial content of the leading economies (as providers and consumers of CMI services), but illustrates the fact that no single economy has the competitive advantage in this field despite various claims. Figure 3 presents the

monitoring submarket for comparison, both as percentage market share and normalized by GDP. At the submarket level there are significant differences. For example Russia, Brazil, Canada and Indonesia have a greater share than the size of their economy would suggest, whereas both Australia at 2.5% and Cameroon at 6.1% would break into the top 15 countries if we were only analysing the monitoring market. These results indicate that monitoring activities are concentrated both on and in countries with large forestry assets. So though CMI activities in total mirror the size of a country's economy, there are significant variations within each submarket based on countries' particular resources. It is interesting to note that the small variations in a country's overall total CMI sector reflect the strong influence of submarkets that are forest related. So Russia, Brazil, Canada and Indonesia have a slight market lead in the total CMI (Fig. 2).

The Russian financial data also provides an interesting insight into the challenges of measuring a new market, as there was a significant increase in Russian CMI activity between 2009–2010 and 2010–2011 (from £872 million to £1.4 billion). This could be for two reasons: either there has been a large increase in activity or the sources of activity are now more visible. At the moment we suspect that the latter is more likely to be true, but must wait for the 2011–2012 research update before we can be certain.

Despite the growing scepticism regarding climate change, particularly in the United States and United Kingdom⁷, the global business community has shown that it is taking carbon accounting and

carbon trading very seriously by investing over £35 billion in information last year. Which raises the important question of why is there high growth in CMI activities compared with a much lower reported growth in carbon trading itself? Possible answers are that this growth (1) represents preparation for an expected new wave in carbon trading, (2) represents a more cautious or regulated approach to carbon trading, (3) reflects the accumulating costs of existing and new trades or (4) shows that growth is being strongly driven by carbon-accounting activities rather than by trading. As we develop new ways to interrogate and interpret the source data for CMI as part of our research for 2011–2012, so the economic and policy drivers for this growth should become clearer. □

Mark Maslin¹ and Martyn Poessinouw^{1,2} are in the ¹Environment Institute, University College London, Pearson Building, Gower Street, London WC1E 6BT, UK and the ²Knowledge Matrix Limited, Greetham House, Greetham, Rutland LE15 7NF, UK.

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