

From Zee to Vee: using property tax assessments to monitor the economic landscape.

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Introduction

The 'real world' in which human society exists is not confined to natural, physical phenomena. From earliest times, human beings have interacted socially and economically. As they do so, they have specialised and traded in goods and services which are the products of combinations of labour, capital, enterprise and the fourth – often forgotten but distinct - factor of all production: land.

Land comprises all natural resources, not just 'terra firma'. It is the universe minus man's products. Even the simplest of human activities, sleep, requires each of us to occupy exclusively a space, a location, preferably a bed in a home of our own. But that word 'own' conjures emotions and political postures.

As everyone who deals in real estate knows, there are three most important things about their stock in trade: location, location and location! Because the market value attached to locations varies over space and time, our real world conceals a shifting and invisible 'land-value-scape'. We can see the roof-tops and admire (or deplore) the physical view. We can measure the bricks and timber in three dimensions. We cannot see the fourth dimension, the fourth factor that comprises 20% to 60% of the market value of our homes: 'v' or value of land per unit area. But we know it is there.

Just as every point on the surface of planet Earth has a 'z' that defines its place in the landscape, so every location has a value in the global economy. This value is a function of three things: content (soil, air or water quality; metallic composition of rock); accessibility (position in relation to human society); and the wealth of that particular community.

Unlike other, natural, phenomena in the real world, the landvaluescape changes over time and space at a fairly rapid and often unpredictable rate. Value only has meaning where there is both human knowledge of the existence of a place and its natural wealth potential **and** the possibility of converting that potential into products that others will wish to buy. Knowledge of places and utility of resources vary with time, as do the workings of markets: physical means of exchange of goods.

For example, the discovery of a new continent immediately gives value to the place in the minds of the crew of the ship that discovers it – as does the discovery of the mysteries of the genetic code in a plant species or the broadcast spectrum. Unless the ship's captain charts the discovery and brings the chart safely back to port – with the plants of the continent – or transmits the information about it through the air-waves, 'discovery' has no value in any market place. Whether we talk about value in exchange or value in use, the measure of 'v' given to a location depends on social context.

The most important difference between measuring 'v' and measuring 'z' is that there is no single objective value of any location, other than at those somewhat rare points in time when real estate is traded, when market price is the surrogate for market value. Even then, transactions that are to form the basis of market valuations need, in theory, to be made in certain idealised conditions, such as open competition between buyers and sellers. All potential parties to the transaction should have perfect information about other similar contemporaneous transactions – and be in an 'arms length' relationship. Contracting parties are assumed to be of sound mind! No two transactions in real estate are ever identical in every respect and the number of factors that can affect price or value is enormous.

Valuation of real estate is tricky. Separation of the value of land/location from the value of land-and-buildings combined is even more tricky. So is it worth the effort involved in replacing 'z' with 'v' in a three-dimensional model of landvaluescape, in order to visualise what is going on in economies in the geo-spatial sense? Are value maps valuable?

The unavoidable subjectivity in assigning value to land or locations is what many geographers, more used to mapping physical features, find discomfiting about value mapping (Dale, 2002). Mapping things of less importance that can be measured more precisely and objectively, is preferred to mapping property values (accounting for at least twenty percent of the global economy) that cannot objectively be measured at all.

Yet value maps have been attempted for various reasons for about one hundred years and are becoming a fairly common feature of the property industry in some advanced countries. The last known comprehensive survey of global practice in value mapping was over twenty years ago, before the widespread use of the personal computer (PC), computer aided mass assessment (CAMA) of property values and geographic information systems (GIS). The author concluded:-

“Value maps will increasingly play a major part in research into the causes and effects of changes in land and property values.” (Howes, 1980)

The hypothesis

This paper describes the background and scope to a research project which sets out to test the hypothesis that “Landvaluescape Visualisation” is worth developing as a fusion of GIS and CAMA, in the specific context of the United Kingdom (UK) but with reference and relevance to global governance. The project forms the basis of a doctoral degree programme commenced by the author in 2001, at the invitation of Kingston University School of Surveying and under the aegis of Progressive Forum International (PFI), an initiative of the Henry George Foundation of Great Britain (HGF).

Background

The author came to this field of work from a career in defence mapping, where he dealt with a wide range of applications for GIS using geospatial physical map data of variable quality from/of many countries and sources. Prior to that he was a construction engineer and planner with several firms in England generically known as 'speculative developers'. Their core business, he learned from experience, was not necessarily to create homes, office blocks and factories but to manipulate the property market in order to profit from the uplift in land values that follows from decisions by public officials and other

entrepreneurs. His on-site construction management skills were needed to produce a steady turnover, employ a minimum of labour and capital and minimise inevitable losses on operations. The real profits were made on land deals, buying speculatively and holding sites out of use until 'ripe' for development.

The common thread between these two businesses is their dependence on land-based information of imperfect quality. Success depends on being able to obtain, combine and analyse the best available collections of information about the real world – whether physical or not – and apply them as knowledge more effectively than competitors. If an army only ever went to war on full, accurate information about the battlefield, it would never leave barracks! Similarly if civil society, governments and property market players only ever made decisions when maps, land registers and valuation lists were in perfect shape, there would be no property market and no government! Decision making takes place with less than perfect 'fit for purpose' information.

Land Value and Property Taxation

The seeds of this research were sown when the author left military service in 1995 and embarked upon a career as an independent consultant, also holding elected office as a local councillor and member of a planning authority for two years. During this period he studied the theory and practice of land value taxation (LVT), co-authored a paper for the World Congress of Surveyors (Connellan, McCluskey & Vickers, 1998) on the role of surveyors in LVT and helped review his party's local government finance policy (which includes a form of LVT). In 1998 he was introduced to HGF and invited to run the Foundation, leaving it last month to concentrate on his own research.

Property taxes have always been a major source of revenue for governments, especially local governments. Their relative importance declined around a hundred years ago, as classical economic theory was eclipsed by the still ruling neo-liberal or Washington orthodoxy and – for some seventy years – its formidable challenger Marxist socialism. Both Marxist and neo-liberal economists share the view that land is neither a factor distinct from capital nor important in an industrial age.

Land conjures up visions of rolling prairies or Constable landscapes, not skyscrapers or dark Satanic mills. Land reform was indeed characterised during the latter half of the nineteenth and early twentieth century in much of the now developed world by massive increases in landless rural and urban poor, as economies switched from subsistence agriculture to industrialised farming and then manufacturing. It also invariably incorporated calls for registration, sub-division and taxation of land. Henry George's book *Progress and Poverty* massively out-sold Marx' *Das Capital* and policies based on his Single Tax (on land values) achieved remarkable results as far apart as China, Japan, Chile, Australia, Denmark and the USA (Andelson, 2000). Between 1915 and 1975 the use of LVT was generally in steep decline, although many local jurisdictions that were given the choice to adopt it continued to do so. Taxes based on land-and-buildings, typically like the British rating system, also declined in relative importance.

Nevertheless the vast majority of developed countries continue to value property for tax purposes and many assess land/site values separately from building values, even where they do not levy a land tax at a separate rate. There is some evidence that, with the collapse of Communism and the globalisation of capitalism, the importance of land as a

source of public revenue may be increasing. This is because most other taxable entities are mobile and can with increasing ease escape the grasp of national – let alone local – treasuries. Location is local: it cannot be moved, hence a tax on the economic rent of land and other fixed natural resources cannot be evaded. Nor can it be passed on, as are taxes on wages and profits, to the consumer via the supply chain, thus adding to inflation.

Rent will remain with the owner unless and until recovered for the community that created it, through taxation. On the other hand, economies competing for the active agents of production – capital and labour – are engaged in a ‘race to the bottom’ of lower tax rates on corporations and high-paid individuals. Governments wishing to invest in public services are finding the most secure source of revenue is the property tax. And within the range of possible property taxes, studies have shown that cities which shift taxes off buildings onto land values out-compete those who do not (Plassman & Tideman, 1999; Hartzok, 1997).

This paper is not the place to make the case for LVT, although it is often claimed to be a tax that supports better land use (Rogers, 1999; Evans & Bate, 2000; Jacobs, 2000). In the context of this paper, the point of this section is to emphasise that there is a very common source of data on property values: the tax assessors’ office. Even if the Assessor is not actually using land values for tax purposes, CAMA enables the land element of gross property assessments to be extracted (Gloude-mans, 2001). Where land value data are available they can be used for purposes other than taxation, especially when GIS are applied to them and value maps are produced (German et al, 2000).

Distinguishing land from buildings

The Nobel-winning economist William Vickrey said that the property tax is actually two different taxes (Vickrey 1991). That is because buildings are capital, not land, in the economic sense – even if, in most legal codes, there is no distinction between land and improvements made to it which are all lumped together as ‘landed property’ or real estate. Buildings and other improvements to land all depreciate over time unless further capital is expended. Eventually the market value of such *improvements* may become negative, owing to the costs that would need to be incurred by someone wishing to redevelop the site for an alternative use. But that does not necessarily take away the rental value of the *site*.

Much urban blight is caused by these so-called ‘brown field’ vacant and under-used sites. However they are often in valuable locations, with good transport connections. It may be that owners are speculating that land prices will rise and enable them to sell at greater profit in the future than now, or it may be that there is genuinely no market for sites in a particular location unless the cost of remediation is subsidised as a form of public investment. Such investment, according to Vickrey and other followers of Henry George, can be entirely funded from LVT. In a lecture given in 1991, first published last year, Vickrey claimed:

“Cities have the capacity to be fully self-financing without dependence on either federal assistance or on general taxes that are unrelated to benefits received.”

The proviso, according to Vickrey, is to replace the tax on buildings with a tax on land value alone – LVT:-

“The property tax combines one of the best and one of the worst taxes we have. The portion that falls on sites or land values is the only major tax that is reasonably free of distortionary effects and is not intolerably regressive”.

Taxing buildings and work done to improve them discourages such work. Un-taxing them and taxing land more highly, irrespective of its actual state of development but based upon its highest and best immediate potential use, will encourage owners to maintain their sites and buildings in such a way as to maximise their income. A remote site or one with conservation or other restrictions will have a low site value, hence attract low taxes, whereas a high value city centre derelict site will very soon be redeveloped. The extra property tax revenue from extending the tax base to sites that are currently under-taxed (because the tax is based primarily on building/rental value not site/owner value), ensures public infrastructure projects can be funded without recourse to general taxes or excessive borrowing on the financial markets.

Mapping ‘roof values’ (combined land-and-building values) is more difficult and less useful than mapping land values. It is more difficult because to value buildings each one has to be physically inspected, which requires skill and time. Adjacent buildings can be quite different, even where their use is similar: an old, run-down low-rise office block might be next to a new high-rise one. The resulting value map will reveal more about the individual enterprise and stewardship of occupiers of sites than it will reveal about the state of economic health of the local community.

By contrast, land values can be assessed largely from maps and documents: a sort of ‘remote sensing’. Especially where the planning system uses strict zoning, it will be clear what the potential ‘highest and best’ use of each site is. Assessed site value is the rent which a bare site at that location (whether **actually** developed or not) would fetch on the open market if sold for development at ‘highest and best’ use, assuming adjacent sites were all in their actual state. Not only does the land value assessor ignore ‘improvements’ to the site, he ignores contamination and other ‘negative’ physical realities. Gwartney (1999) sets out the basic theory and practice of assessing land values.

The analogy with remote sensing methods for mapping topography is useful. Just as a topographic mapper ignores man-made irregularities that appear on the air photograph or satellite image when seeking to trace ground contours, so the assessor ignores man-made features when focusing on the site value of a developed site. The roofscape of a city or the complex pattern of tree plantings in a commercial forest can obscure the subtle but more regular shapes on the underlying land, as well as the economic potential that landvaluescape reveals. Just as nobody would dream of trying to map the intricate contours of buildings, tree-tops or limestone pavements, similarly there is no suggestion that value mapping of gross property values is useful: it is the land values that we are after.

Assessors seeking to reveal landvaluescape would no more use direct physical inspection of every property to produce their map products than land surveyors would abandon remote sensing to return to antique methods of chain, theodolite and plain-table to produce a modern contour plot. CAMA produces land value maps that are not only fit for purpose but far more cost effective than methods used for gross property values.

Problems with land value mapping

There are perceived to be three main problem areas with mapping land values:

- mathematics
- institutions
- public mind-set

At this stage, the author has only begun to define the scope of each of these and to study what might be appropriate methods of quantifying the scale of the problems.

Mathematics

The mathematical problems are in three areas: normalisation of site values; ‘fuzziness’ or toleration levels; smoothing algorithms for surface generation. In simple terms:

1. How do we reduce raw property market data from disparate sources to a consistent form that can be compared and analysed?
2. How do we deal with the varying confidence levels that will be attached to different values, according to the quality and density of the source data and the frequency of observation?
3. How do we choose the best way to average or smooth out the bumps in the landvaluescape when forming the model?

Almost all transactions in real estate are not of land alone but of sites with buildings, crops or other ‘improvements’ (positive and negative in value). Also, although property taxes are levied annually, many types of property in most countries are normally bought and sold and not rented or leased – or the leases are quite long. Various types of actual transaction data or other less reliable sources of raw data about the property market have to be surveyed. These must then all be reduced to either a capital or a rental basis, depending on the property tax system in use. If the tax is based on rental values for one type of property and capital values for another (as in Britain), one set of data has to be converted.

Normalisation, as this is called, comes within the skills of experienced professional valuers, although it is not in everyday use by the British rating specialists who would be expected to lead any reforms in the UK towards LVT or CAMA. The three most common methods of property assessment (comparative sales, construction cost, and income analysis) are all capable of providing either market or rental value, although the first two normally produce a capital figure and the third produces a rental figure. An assumption has to be made in each case about either depreciation, inflation or interest rate – or all three.

Once all available actual transaction data have been normalised, application of CAMA or a high degree of professional judgement are necessary to extrapolate from these ‘benchmark’ properties to the remainder.

This is where computers come in. When Howes undertook his survey of global value mapping in the late 1970s, he found very few large-scale examples of the art. Value mapping was mainly used for research or development studies of limited areas: a re-development site, traffic scheme or at most a city centre. Lichfield (1956) describes the

problems of value mapping in the pre-computer age, while setting out the theoretical benefits of doing it and also pointing to rating (property tax) lists as the best source of data. Nowadays not only can computers handle vast quantities of data, they can easily produce useful ‘meta-data’ – information about data, both input and output. The products of CAMA are not just land and property values for each unit of taxable real estate but estimates of the reliability of each of these values. These can be tested against subsequent real transactions and the model landvaluescape continuously adjusted along with market trends. Information about the quality of assessments is nearly as useful as the assessments themselves, where costly legal appeal might otherwise result.

Using methods such as linear or multiple regression analysis, CAMA empirically resolves the values of dozens – or even hundreds – of variable factors that might be supposed to affect the value of property and which can be objectively measured. Examples are: type of construction, usable floor area, number of car spaces, age of structure, number of floors, has basement, view over water. Having solved for each of these, it seems to be increasingly accepted that the residual value is accounted for solely by location. Given just a few transactions in bare land per thousand properties to ‘ground’ the overall model, an estimate of the current land value of each site can be deduced. Gloudemans (2001) suggests this could enable LVT to be successfully introduced in areas with transparency in property market information, even where is little direct evidence of land values.

In areas where there is a steep ‘gradient’ or complex ‘terrain’ in land values, over either space or time, it is important to choose the right algorithm for smoothing out the irregularities that will show in a first pass through CAMA. This is a problem with GIS generally, where values are associated with non-regular planimetric shapes. It is known as either the Modifiable Area Unit or Ecological Fallacy problem and occurs with conventional landscape mapping as well as with mapping of other socio-economic phenomena. It is particularly important with property taxation, because it affects individual finances. Put simply, tax bills can end up badly wrong unless CAMA uses the right maths. The more that land values are changing over space and time, and the higher the property tax rate, the more important this issue will be.

Finally, the generation of isovals or contours from the model involves further approximation and smoothing. Lichfield (1956) discussed the theoretical problems long before computers came into use. Now that the theory can be turned into practice, the mathematics of isoval generation needs to be addressed in earnest as part of the design of an effective tool for landvaluescape visualisation. It is worth noting however, that Lichfield was concerned with the use of land value maps as an aid to urban planners and not in connection with property tax administration.

Institutions

Whilst land surveyors world-wide have experienced two or three wholesale revolutions in technology since the computer was invented, valuation surveyors in Britain have barely experienced one. The national rating lists are held on a main-frame computer with a largely 1970s operating system that has been upgraded rather than re-engineered. Value maps in the public sector are still almost unheard of in the UK, whilst GIS has become *de rigueur* for local authorities and many other public bodies.

The reason is probably largely to do with the political and emotional nature of property. Few things are more political than land, information and tax, so that attempts to reform systems and laws that enable information about property to be assembled in order to tax it are bound to be controversial. Countries that exhibit a stable political and cultural environment seem to find it hard to give priority to reform of property tax. History seems to show that the best time to introduce land reform is when there is already a political transition, e.g. Eastern Europe after Communism and South Africa after Apartheid.

The last serious riots in Britain accompanied the infamous Poll Tax in 1989, when a property tax was replaced by a tax based on head-count. Most commentators agree that the rating system came into disrepute largely because Governments failed to commission a national re-valuation: the rating lists were 17 years old by 1988. Similarly Germany now has property assessments that are between 35 and 60 years old, which has caused the Federal courts to express concern over human rights: owners of new homes are taxed on the basis of up-to-date assessments, while their neighbours pay much lower tax based on very old assessments (Josten, 2001).

Until 2000 it was impossible in England and Wales¹ to discover the price paid for a property, even though that information had to be supplied to the income tax authorities for calculation of capital gains and inheritance tax liabilities. The ownership of registered land only became accessible to the general public in 1990 and it is unlikely to be possible to find out who owns a particular site unless it has been the subject of a recent transaction, because England & Wales do not have a complete Land Register. All information about land ownership has been regarded as private. Laws regulating the use of land and rights to develop it have similarly – not just in Britain – generally been the subject of hot dispute. Even where there is much greater transparency in property market information, the subject of property taxation – and assessment for taxation – has been highly political, in a way that information about the physical landscape is not.

Devolution is taking place in the UK and may be the catalyst for tax and other reforms. In England the main databases (land registry, topographic mapping, valuation lists) are under different ministries, leading to problems in policy integration for the National Land Information Service (NLIS) initiative. By contrast all three functions come under a single minister in Northern Ireland. Dale (2002) points to the need for joined-up policy making if land information is to be used effectively. Wales, although not having, as yet, legislative freedom to change taxes, has already shown since executive functions were democratically devolved to the Synedd in Cardiff in 1999, that innovative changes in tax administration are not difficult. The will to change seems to come from a simple competitive urge to show that Wales can do better than England, if given the chance.

Even where there is LVT, the quality of land value information can be highly questionable because of lack of transparency rather than innate inability to discover land value. In Taiwan the official assessment authority is not allowed access to actual property transaction information (Tsai, 2001), forcing it to rely on second-best sources to main the valuation lists. In Pittsburgh, LVT was suspended by the City Council in 2001 after the county sacked all its local assessors and hired a company with no local knowledge and a poor understanding of the workings of LVT to undertake revaluation by

¹ Scotland has had an open Land Register for much longer.

CAMA. This revealed systematic under-valuation of land by the previous tax officials but replaced it with assessments that appeared to many to have no systematic basis at all (Vickers, 2002).

Ironically it is the very globalisation that many environmentalists oppose that may help force open information about land ownership and value and regularise assessment systems. Investors are demanding more transparency in property market information in order to reduce risk and global investors have more clout than local ones. A free market in property can no more exist in the absence of full information than it can for any commodity. Not only does information need to be complete and consistent, it must be produced and presented in a standardised form. Increasingly national valuation standards and procedures for tax assessment are giving way to - or having to exist alongside - international standards, where true market valuations are demanded by investors.

Many tax assessors are politically appointed and their assessments are influenced significantly by their desire to remain in favour with local politicians and voter interests. Even the frequency of reassessments for taxation can be influenced by political considerations, as happened in Britain. Investors demand impartiality and expect to be able to compare property values across political boundaries, which is seldom required of tax assessors, whose concern is merely local relativity.

Public mind-set

Given the political nature of the subject of LVT, this research is giving high priority to finding out the public perceptions of issues such as property taxation, sustainable development and value mapping. If there is to be the political will to reform laws and processes so that LVT and value mapping are possible, then it is felt that there must first be public education about the nature of landvaluescape and the effect that different forms of taxation have on environmental policy and local economies.

As part of the author's David C. Lincoln Fellowship in LVT, begun in 1999 and ending this year, a series of surveys has been conducted among property tax stakeholders. Sixteen 'statements' were drawn up after consulting representatives of stakeholder groups such as GIS professionals, local government officials, property assessors and business taxpayers. A questionnaire was mailed to over 3000 individuals to elicit their views on matters relating to the possible introduction of LVT to Britain, replacing the present business rating system. The results of this postal survey indicated a strong underlying support for and understanding of many of the principles of LVT. In particular respondents expressed overwhelming support for the use of GIS to help them understand how a property tax was based; they also agreed strongly that LVT was likely to help achieve urban renewal (Vickers, 2000).

Since the five percent response to the first survey was a self-selecting sample, the second stage of this Fellowship repeated the survey using face-to-face interviewing. A hundred business owners in Liverpool, one of the most economically depressed cities in Britain, were faced with the same statements, their responses then compared with those from 25 businesses in a contrasting town of full employment, Newbury, as control. Liverpool City Council is the only local authority in the UK to have formally asked Government to be allowed to pilot LVT. Once again, these interviews showed strong support for LVT

and for the use of value maps as a tool for gaining understanding of its workings (Vickers, 2002).

A demonstration using data supplied by Lucas County Ohio has been shown to professional groups throughout the UK, as well as to the Valuation Office Agency (VOA) in London, which is seeking to improve the acceptability of the existing business rate system. VOA currently spends four times as much on contesting appeals against property assessments as it does on producing the rating lists: it feels that greater involvement of taxpayers in producing the assessments, perhaps using value maps, may save money overall.

In this year's final Fellowship exercise, a number of discussion groups will be held in Liverpool, at which the results of a trial land valuation of part of the city will be revealed using GIS. The purpose is to make it easier for the implications of LVT to be understood and aired, as well as to design GIS products that meet this need. There will be an element of cartographic design needed to produce contour and choropleth maps that effectively communicate the landvaluescape to those who need to understand how it changes and how that affects them: planners, tax administrators, local politicians and citizens in general.

It is expected that GIS will help gain acceptance for LVT and might help improve property tax assessments and reduce appeal rates where these are currently high. However in Denmark, where appeal rates are already very low and LVT is established, the decision has recently been made not to use GIS and value maps as part of the national tax administration. Denmark seems in many respects to have a model property tax system: assessments are revised every year and published in telephone directories; there is no apparent public dissatisfaction with LVT or the property tax in general; Danish tax administrators act as consultants to many countries in political transition. Although Denmark was one of the first countries to have nation-wide LVT and to use hand-compiled land value maps, it has now ceased to use them just when they would seem to have become easier than ever to compile (Müller, 2000).

The value of value maps in helping to change the public mind-set and hence apply pressure on politicians and institutions to improve property taxation is questionable. Without good property assessments and the use of CAMA, it is likely that land value maps will remain fairly unconvincing. Yet convincing value maps may be needed to persuade governments to spend money on improving property assessment. By focusing resources on one or two pilot areas in the UK, it is hoped that both LVT and value maps will be proved worthwhile.

Current State of Value Mapping

With the assistance of the Fédération Internationale Géométrique (World Congress of Surveyors – FIG) and the research department of a British property consultancy, the author has recently piloted a questionnaire “Value Maps and Global Governance” to establish the current state of global practice in property assessment and value mapping. Sixteen responses from four continents have been received. Virtually all respondents' countries have computerised national mapping and map-based land ownership registers. The majority value land separately from improvements, even though most do not have

LVT. About half already use CAMA and others are considering doing so, all use GIS extensively.

Among the comments received from those who are actively involved in the field are these. Rudd Kathmann, of the Netherlands Council for Real Estate Assessors, states: *“value maps are used for analysing results of CAMA assessments and market developments”*. Professor Kauko Viitanen of the Institute of Real Estate Studies at Helsinki University says: *“We are using many kinds of value maps in tax, statistics, market analysis, planning, etc.”* Chan Hak of the Hong Kong Lands Department claims: *“Value maps would be widely used not just by government departments but also the private sector”*.

Late in 2001 HGF was approached by a consortium of European bodies, mainly local and regional governments, who had seen from the Foundation’s web-site that we were engaged in research on LVT and value mapping. As a result PFI has participated in two major bids for European Commission (EC) funding, with the encouragement of the EC’s own Land Management Unit at the Institute for Environment and Sustainability, part of the Joint Research Centre of EC based in Italy. The first bid, to set up a network of European organisations to share best practice in - and help develop policies that – support sustainable urban development, was not successful because it was seen as too ambitious in scope. The second bid, submitted February, is for a project named MURSUS (Monitoring URban SUSTainability) that aims to define the monitoring requirements and consequent data requirements of a European-wide Urban Monitoring Information System (UMIS).

The fact that researchers responsible for advising the EC on sustainable urban development consider that land values are likely to form part of UMIS seems to show that property tax assessments ought to be considered as potentially useful beyond the tax assessment office of public authorities. Value maps are known to be in commercial use, helping provide competitive advantage to property consultants assembling market data from clients, governments and other sources, monitoring the economic landscape for private and corporate gain.

Almost exactly a year ago the campaigning environmental organisation Friends of the Earth (FoE) joined PFI, calling for governments to act together in making a ‘green tax shift’ away from dysfunctional taxes on jobs and enterprise and onto pollution and natural resource usage. FoE sees LVT as a key environmental tax and supports the setting up in the UK of a Citizens Sustainable Taxation Commission. A report was published earlier this year by PFI that concluded more needs to be done to help politicians and the public understand the need for more sustainable taxation and for LVT as part of this (Oshitani, 2002). Value mapping could be part of this public education. It is not only land values that can be mapped: there are spatial variations in the value of airspace, shipping lanes and aircraft landing slots.

It would seem that the time is ripe for governments themselves to explore the possibilities of value mapping, as a tool for achieving better land use as well as more equitable and sustainable tax systems. However there remain formidable problems to be overcome in most countries, both technical and institutional, if these possibilities are to be realised. It is hoped that more resources will be deployed to research the problems outlined in this

paper and that PFI, launched this month here and at FIG in Washington, can be the catalyst to help co-ordinate and disseminate the results of such research for public benefit.

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