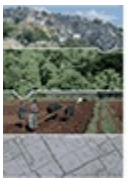

Integrating Land Governance into the Post-2015 Agenda
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LAND ASSESSMENT FOR SOCIALIZING LAND RENT WHILE UNTAXING PRODUCTION

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Abstract

Public revenue to finance good quality services can best be procured when the community recaptures socially generated land rent rather than taxing labor and production. Cities need a sustainable and growing revenue source to fund community government public services. A land rental fee raises revenue from land use, natural resources and community funded improvements. Land rent is formed from ecological and social endowments, not the personal activities of individuals. A system of public finance that would strengthen and maximize incentives for the fair distribution of wealth, environmental protection, efficient wealth production, provision of adequate government services and peaceful resolution of territorial conflicts can be created.

There is sufficient land rent available to deliver adequate funding for the services made available by a local government. The value of land rent can be estimated with an acceptable accuracy and transparency, at a cost which is very small compared to the revenue to be obtained. A proper system of assessment and collection of land rent can provide for the proper economic use of the land. This paper discusses the procedures for land rental assessment, the appraisal process and seven methods that can be used to estimate the rental value of land.

Key Words:

Land, Rent, Assessment, Revenue, GDP

INTRODUCTION

Communities are looking for new methods of raising revenue to support its governments that provide services for its people. This paper will introduce the concept of collecting land rent which will provide the needed public revenue for the community's economies. Every community that gathers its revenue from land rent enhances the wealth and well-being of its entire population. Taxes do not need to be raised from buildings, workers, producers and merchants. This paper will show how to implement the concept of collecting land rent and the methods for valuing land rent. Two examples of communities that have been funded from land rent are presented.

LAND AND BUILDINGS

Real estate consists of land and buildings. The nature and characteristics of land and buildings are totally different and the revenue raised from each has totally divergent effects on people, communities, commerce, growth and economic well-being. Buildings are created by man’s labor and incur a cost to produce. They deteriorate over time, lose value and need to be replaced. They should be built in suitable locations in order to preserve farm land and natural resources.

Land is defined as everything that is freely supplied by nature, which includes all natural resources, such as air, soil, minerals, airwaves, forests and water as Figure 1 shows. Everything not made by man, is categorized as land. Land has no cost to produce as it is nature's gift to mankind. Land's uniqueness stems from its distinctive location, fixed supply and immobility. Land is required in the production of all goods and services. Land is our most basic resource and the source of all wealth.

SOCIALIZING LAND RENT

Land rent is the value created from ecological and social endowments, not the personal activities of individuals. Land rent is an amount that should be paid annually for the exclusive right to use a land site location or other natural resource. Land rent varies by location and available amenities. It changes by people's competitive desire to use the same land site. Since land is fixed in supply and cannot be expanded, demand is the sole determinant of land rent. As the demand for land increases, the rent will increase proportionally. Collecting land rent will enable the community to attain a sustainable and growing revenue base for funding community services. Buildings are not a part of land rent. Land rent is the only source of public revenue that could be taken for public purposes without having any negative effect on the productive potential of the economy. When a community collects land rent for public purposes, both efficiency and equity are realized. Land rent exists whether the community collects it or allows people to retain the rents that were produced by the services in the community. Land is a visible and can't leave the community.

Communities have raised revenue from land taxes, land sales and land use development fees. They have invested in infrastructure, public utilities, police and fire protection, recreation, public services, healthcare, education, recreation, preservation, and community services. This investment has increased the rental value of land. The community provides services to the land and each land user should pay land rent to enable the community to provide high quality public services to everyone.

In the past century the source of public revenue has shifted away from land rent unto wages and interest as Figure 2 shows. It is time to reverse this trend and raise public revenue from land rent allowing wages and interest to be retained by workers and investors. We propose socializing land rent while un-taxing production and wages.

Collecting land rent would fund public service needs and also provide economic benefits to the community. It would encourage urban development and reverse the detrimental use of farm land and the sprawl into rural areas. Figure 3 shows that most of the world's best farm land soil has been degraded. Paying land rent would reduce land speculation and premature land use. It would influence land speculators to build or sell to others to recover their carrying costs. The requirement to pay land rent

would foster the most efficient, “highest and best” use of land. Land would cost less and be more available.

UNTAXING PRODUCTION

The rental value of land should be sufficient to finance all public services and to obviate the need for raising revenue from taxes. Public revenue should not be supplied by taxes on people and enterprise unless all of the available revenue has first been collected from the natural resources and the community-generated land rent. Only if land rent were insufficient would it be necessary to collect any taxes. In fact doing so penalizes and depresses productivity. Low or no taxes on production and distribution would foster economic activity. New businesses would start, and there would be new investment and opportunity to be involved in productive activities. New jobs would be created and wages would increase.

ADEQUACY OF LAND RENT

In the early 1990’s I was a consultant in several cities in Russia and Estonia. These cities included Novgorod, Saint Petersburg and Tallinn. My research indicated that even though they did not have established land records and there was no available data on land rentals or sales in 1990, a Russian public resource official estimated the value of land and natural resources as greater than $3 trillion. There was enough land rent to fund all of the local and provincial government requirements.

Many countries do not maintain good records of land rent and land value. Australia has some of the best records available on land rental values. On figure 4, a comprehensive study was completed in Australia, by Terry Dwyer and Bryan Kavanagh that concluded land rent represents more than 25% of gross annual domestic product. Australia’s land rent is more than adequate to eliminate taxes on buildings, wages, production, commerce and investment. The gross domestic product of the world in 2012 was $72.2 trillion. Using the research from Australia, the world’s land rent could be $18.05 trillion as Figure 5 shows. With the world’s population of 7.146 billion that would be $2,527 land rental value per person.

Land rent produces a higher present value of income than a one-time payment for a land grant, which many world cities have relied upon in the past. Collecting land rent can provide the sustainable public revenue for the community's economy. The community can offer its people the best public services in the world. The collection of land rent, by the public for supplying public needs, returns the advantage an individual receives from the exclusive use of a land site to the balance of the community.

EXAMPLES OF LAND RENT

In the United States the property tax is used as a primary source of revenue for funding local government services, infrastructure and public schools. Both land and buildings are usually taxed at the same rate. Some cities allow a higher tax rate on land value and a lower tax rate on building value.

Fifteen cities in Pennsylvania tax land at higher rates than buildings. One such city is Harrisburg the State Capital of Pennsylvania, USA. The tax rate for land is six times higher than the tax rate charged on buildings as Figure 6 shows. This low tax on buildings offers a significant influence on attracting new and additional investment, while simultaneously offering additional jobs, a larger tax base and expanded economic activities overall. In Harrisburg the higher land value tax has stimulated the highest and best use of land. It has discouraged land speculation and dramatically encouraged vertical development of high rise development. It has reduced the need to spread single projects across larger tracts of land and the land tax policy has made it easier to secure and to preserve open space areas for parks, recreation, historic sites, agriculture and public purposes. The low tax on buildings and higher tax rate on land began 30 years ago. A few of the improvements mentioned in a Harrisburg promotional brochure state that the number of unused vacant structures, has dropped by 88%, employment has increased by 20%, the crime rate has dropped by 22% and the fire rate has dropped by 51%.

An example of a land value capture system that began initially to fund irrigation infrastructure is that of California's local irrigation districts under the Wright Act. After one California rancher who owned one million acres of land won full rights to the water of the Kern River (1886), citizens organized and the Wright Act was legislated permitting local irrigation districts to build dams and canals and other infrastructure to be funded by bonds paid off by land rent. In ten years, the Central Valley was transformed into over 7,000 independent farms. The Wright Act was amended to mandate the total exemption of improvements from the tax base. Irrigation Districts included and taxed land that was used not only for farming but also for residence and commerce within townships. Steadily the Irrigation Districts evolved to provide reclamation, recreation, and electric power. The formerly semi-arid plains of the San Joaquin Valley became the "bread basket of America", one of the most productive farming areas on the planet.

PROCEDURES FOR LAND ASSESSMENT

The assessment process is an organized procedural analysis of data. This procedure involves eight specific phases, each of which contains numerous procedures.

1. Defining the Assignment - The goal is to estimate the **rental value of all land sites** within a given district. Land rent is defined as an amount that should be paid annually for the exclusive right to use a land site location or other natural resource.

2. Determining the Data Required and Their Source - Data related to land attributes include maps, aerial photographs, descriptions of physical characteristics like size, shape, view and topography,

permitted uses, economic usefulness, present uses, available utilities, proximity to town centers or employment, and site improvements like streets, curbs, gutters, sidewalks and street lights. How are records being maintained for the values or fees that are currently being paid by land occupiers?

3. Collecting and Recording the Data - Assessors determine: 1) what land data and valuation systems currently exist, 2) how effectively they operate, 3) how to build upon and improve these systems and 4) how to implement procedures for collecting additional data to improve the estimates of land rental values.

4. Verifying the Data - Rental data should be verified with people directly involved in the lease and with government officials who have first-hand knowledge of the lease terms.

5. Analyzing and Interpreting the Data - The balance of this report will be concentrated on various methods of analyzing and interpreting land rental data in order to estimate the rental value of land.

6. Estimating the Rental Values - Assessors analysis allows them to assign preliminary land rental estimates that serve as the basis for the rental value that will be paid by a land site user for the exclusive use of a location.

7. Public Examination and Analysis of the Land Rental Values - The preliminary land rental values can then be displayed on a land rental map. Public examination and review of the land rental values for land sites help to eliminate any irregularities or miscalculations in the assessments.

8. Periodic Updating of Assessments - Land rental values tend to change each year usually at a rate greater than inflation. If land rental values are not maintained on a regular basis (annually), they will become greatly under-assessed in only a few years.

APPROACHES AND METHODS USED TO ESTIMATE LAND RENTAL VALUE

There are three approaches to valuing real estate, (1) the cost approach, (2) the market approach and (3) the income approach. The resulting indications of land rental value from the three approaches can be correlated into a final estimate of land rental value for the site.

(1) The cost approach is based upon the principle that the informed purchaser would pay no more than the cost to produce a substitute property with the same utility as the subject property. It is particularly applicable when the property being appraised involves relatively new improvements representing the highest and best use of the land or when the site holds relatively unique or specialized improvements for which there exist no comparable properties on the market. Rental values are related to the cost of construction.

(2) The sales-rental comparison approach utilizes prices paid in actual market transactions of similar properties to estimate the land rental value of the site. This appraisal technique is dependent upon

utilizing truly comparable land rental data which have occurred near enough in time to reflect market rental conditions relative to the time period of the appraisal.

(3) The income capitalization approach is widely applied in appraising income-producing properties. Anticipated present and future net operating incomes, as well as any future reversions, are discounted to a present-worth figure through the capitalization process. This approach also relies upon market data to establish current market land rental and expense levels to arrive at an expected net operating income.

There are seven specific methods used in appraising land rental value, (1) land rental comparison, (2) proportional land rental relationship, (3) developmental analysis land residual, (4) allocation land ratio, (5) extraction of land rental value, (6) ground rent of leased land, (7) subdivision development estimating land rental value. Necessary tools may include land rental value maps and computer estimated regression models for estimating land rental values. The value of land rent can be estimated with an acceptable accuracy, at a cost which is very small compared to the revenue to be obtained.

LAND RENT RELATIONSHIP WITH LAND MARKET VALUE

Land Market Value is the total land rental income, minus the portion of land rent collected for funding public purposes, divided by a capitalization rate. A portion or all of the total land rent should be collected by the community for conferring the exclusive use of a land site. The portion of land rent collected is subtracted from the total land rental income.

The mathematical relationship is then:

$$\textbf{(V) Land Market Value} = \frac{\textbf{(I)}\ \text{Total Land Rental } \textbf{I}\text{ncome} - \textbf{(C)}\ \text{Land Rent Collected}}{\textbf{(R)}\ \text{Capitalization } \textbf{R}\text{ate}}$$

Assume that the total land rent for a site is $2,000; the land rent collected is $1,400 and the capitalization rate is 6%, what would be the land market value?

$$\textbf{(V) Land Market Value} = \frac{\$2{,}000 - \$1{,}400}{6\%} = \frac{\$600}{.06} = \textbf{\$10,000}$$

What would result if no land rent were collected?

$$\textbf{(V) Land Market Value} = \frac{\$2{,}000 - \$0}{6\%} = \frac{\$2{,}000}{.06} = \textbf{\$33,333}$$

If only a small amount of land rent remained to be capitalized after land rent was collected, land would have a lower market value. It would, however, continue to have the same rental or productive value ($2,000) to the community whether public revenue is taken or not.

LAND RENTAL COMPARISON, SEE TABLE 1

The best method of estimating the rental value for a land site is by making a direct comparison with other sites that have recently rented. Rentals are analyzed, compared, and adjusted to provide the rental value indication for the land being appraised. Rentals of similar vacant sites or the land portion of an improved rental are compared to the land being appraised. Rentals can be used to assist in the interpretation of evidence for a few sites (the sample), so that all of the sites within a neighborhood can be properly estimated (the population).

After a base rental value has been estimated for a neighborhood, each individual site must be considered. Some sites have unique advantages or disadvantages compared to other sites. Assessors will want to study the typical differences and make individual refinements. They would make a positive adjustment for such desirable characteristics, as superior location, good views, topography, services and access; and a negative adjustment for such undesirable characteristics, as poor location, longer distance to transportation or civic centers, wet ground in the winter or poor access.

Actual real estate rental values vary for each site and are dependent upon numerous individual features, qualities, characteristics and restrictions such as:

location	**size**	**level site**	**view**
topography	**river front**	**transportation**	**parks**
traffic	**noise**	**recreation**	**services**

People would tend to be willing to pay additional rent for a land site with special advantages and would pay less rent for a land site with disadvantages. The rental value for the unique differences would be determined by how much more or less site users in general were willing to pay for those features. This difference must be determined for each significant variable feature.

A land rental adjustment grid can be made to show how properties vary from one another based upon differing characteristics and features. The table would show how land rental values increase or decrease due to distance, size, transportation, recreation and other important superior and inferior characteristic differences.

PROPORTIONAL LAND RENTAL RELATIONSHIP, SEE TABLE 2

When there was limited data available on land rentals or sales a proportional land rental relationship was developed. Based upon observing data in other jurisdictions, where land data already exist, a rental value

for differing property types was created. This could be a method for setting up an initial land rent assessment system, which could be improved as new comparable land rental data becomes available.

If a jurisdiction has some limited land data, such as permitted use (zoning) and density of population, it would be possible to build a simple model. An assessor may draw a grid, showing the potential use on the Y axis and the resulting land rental value factor on the X axis. For example, a typical home unit site in a major city can be assigned a base rental value of **1.00** to which all other sites would be compared. Moving toward a superior location and potential use would influence the land rental value in a positive manner; moving away to an inferior location and use would influence the land rental value in a negative manner. Farm land has very little comparative rental value but commercial land has much greater land rental value. Figure 7 shows the steep gradient that commercial land possesses. Land rentals tend to be greatest in cities and lessor in rural areas.

DEVELOPMENTAL ANALYSIS LAND RESIDUAL, SEE TABLE 3

A theoretical method to achieve a land assessment system is to make an estimate of the land rental value, based upon the net land residual income (total income, less all costs except land rental value). This would result from the development of a hypothetical building of the highest and best use for a given site.

First, determine what hypothetical improvements represent the highest and best use (greatest land value) for the site and the gross possible income ($24 per square foot) from the improved site. Second, determine the net property income by subtracting an allowance for the average vacancy (non-use) over the life of the investment ($1 per square foot) and the probable operating expenses ($5 per square foot). Third, estimate the cost of the proposed building. A portion of the net income ($12 per square foot) is required to recapture the investment in the hypothetical building and furnishings, and what remains is the total rental income residual ($6 per square foot) to the land. Fourth, subtract the land rent collected ($5 per square foot) for public purposes. The land value could be determined by capitalizing the net land income ($1 per square foot) which was not collected for land rent. The capitalization rate, perhaps 6% per year, would vary for different types and ages of property. The land price ($17 per square foot) is what a potential future user would have to pay in orderGwartney, Ted. (2012). Estimating land values to use the site, unless all of the land rent is collected for public purposes.

ALLOCATION LAND RATIO, SEE TABLE 4

There tends to be a typical ratio of land rental value to property rental value (land plus buildings) for specific categories of real estate with similar characteristics in particular locations. An analysis of a sample of units can be conducted by subtracting the building rental value from the total rental value.

From this analysis a typical land factor (relationship) is determined for each type of property and location based upon the available rental data. For example, the assessor could conclude that the typical land factor is .40 (40% land and 60% buildings). Once the land factor has been determined and tested for accuracy, the land factor can then be applied to all of the total rental values for the similar type of units in a given district to estimate the individual site land rental values.

EXTRACTION OF LAND RENTAL VALUE, SEE TABLE 5

When there is a site that is suitable for redevelopment and the current buildings (as an interim use) make only a small contribution to the rent, the majority of the property and rental value is land value. The property gross income is used by subtracting an allowance for vacancy and operating expenses to determine the net property income ($18 per square foot). The buildings contribute only a small value and a small portion of the net income is required to recapture the investment in the existing (interim use) building and furnishings ($2 per square foot). What remains is income residual to the land ($16 per square foot). Subtract the land rent collected for public purposes ($12 per square foot) to determine the net land income ($4 per square foot). The land value could be determined by capitalizing the net land income which was not collected as land rent. The capitalization rate, say 8% per year, would vary for different types and ages of property (the property interim use requires a higher capitalization rate). The land price ($50 per square foot) is what a potential future user would have to pay in order to use the site, unless all of the land rent is collected for general public purposes.

GROUND RENT COMPARISON OF LEASED LAND, SEE TABLE 6

In some communities land can be leased to tenants who construct buildings and pay an annual land rental fee. These land rental fees can be analyzed, so that a land rental fee can be estimated based upon comparable lease rentals. All leases should contain a clause that provides for an annual lease rate updated to ensure that land revenue increases over time. If the lease is for both the land and the building, the building portion of the total rental must be subtracted from the total rent leaving the rent allocated to the land. Net ground rent is the amount paid for the right to use and occupy the land. Adjustments are made for differences between comparable rentals. Land rent adjustments per square foot are made for differences from the property being appraised.

Three differences were observed, location, traffic and parking. Rent 3 was the best comparable rental located in the same area and required only one adjustment for traffic, $9.75 is the adjusted price per square foot. Rent 2 required three small adjustments, $9.50 is the adjusted price per square foot. Rent 1 required three larger adjustments $9.50 is the adjusted price per square foot. The concluded adjusted rent per square foot is $9.50. If capitalized at 10%, it yields a market value of $95.00 per square foot. If this

lease was with a private party a portion of that $9.50 price per square foot would be due to the community.

SUBDIVISION DEVELOPMENT ESTIMATING RENTAL VALUE OF LAND, SEE TABLE 7

This is a hypothetical method of estimating the market value and the rental value of raw undeveloped land. This is the method used by developers to estimate the price they can pay for raw land before site improvements are made. The total value of undeveloped land is estimated as if the land were subdivided, developed and sold as individual sites. The income projection is discounted over the estimated time period required for market absorption and sale of all of the developed sites. Development costs, incentive costs and carrying charges are subtracted from the estimated discounted proceeds of the sale.

The Assessor estimates how many sites or units would represent the highest and best use of the raw land. Then an estimate of what the sales price of each fully improved site would be. The estimate was 50 sites selling at $50,000 each for total sales proceeds of $2,500,000. When discounted at 15% over 50 months the return would be $1,850,000 beGwartney, Ted. (2012). Estimating land valuesfore all of the development costs, incentive costs and carrying charges are subtracted. The total costs to develop are $1,350,000. The value of the raw acreage is $500,000 or $40,000 per acre for the 12.5 acres. The 50 sites that are going to be developed and sold for $50,000 each have a current undeveloped raw land value of $10,000 each.

If the capitalization rate of undeveloped land was 10% the current site annual rental value would be $1,000 each. The current annual rental value for the proposed 50 sites on the 12.5 acres would be $50,000.

CONCLUSION

We have considered the best methods for obtaining public revenue. We have found that land rent is the most just and is adequate to serve public needs when the community recaptures socially generated land rent rather than taxing labor and production. Cities need a sustainable and growing revenue source to fund community government public services. A land rental fee raises revenue from land use, natural resources and community funded services. Land rent is formed from ecological and social endowments, not the personal activities of individuals. There is sufficient land rent available to deliver adequate funding for the services made available by a local government.

We have discussed the procedures for land rental assessment, the appraisal process and seven methods that can be used to estimate the rental value of land. It is feasible to update land rental values annually at a low cost. The value of land rent can be estimated with an acceptable accuracy and transparency, at a cost

which is very small compared to the revenue to be obtained. A proper system of assessment and collection of land rent can provide for the proper economic use of the land.

We can build a system of public finance that would strengthen and maximize incentives for the fair distribution of wealth, environmental protection, efficient wealth production, provision of adequate government services and peaceful resolution of territorial conflicts. This would be accomplish by sharing the value of commons rent (socializing rent) on surface land sites, charging for emissions into air, the use of water, timber, grazing, mining, oil, minerals, water resources, electromagnetic spectrum and geo-orbital zones. This would allow reducing or eliminating taxes on income, wages, capital, sales, homes and buildings.

Closing with a quote from Joseph Stiglitz, Nobel Memorial Prize in Economics, 2001, *The 1 Percent's Problem*. Vanity Fair. (May 31, 2012). *Retrieved from vanityfair.com/politics/2012/05/joseph-stiglitz-the-price-on-inequality)*:

> *Much of the inequality in our economy has been the result of rent seeking, because, to a significant degree, rent seeking re-distributes money from those at the bottom to those at the top…. rent seeking distorts resource allocations and makes the economy weaker. It is a centripetal force: the rewards of rent seeking become so outsized that more and more energy is directed toward it, at the expense of everything else*

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Tables

Table 1 Land rental adjustments per square foot (example)

Variable	=	Standard	>	Superior	<	Inferior
Base rental - $		**$80**		**$80**		**$80**
Downtown - miles	**5**	**$0**	**3**	**+ $4**	**7**	**- $4**
Size - square feet	**10,000**	**$0**	**12,000**	**+ $4**	**8,000**	**- $4**
Transport - blocks	**3**	**$0**	**1**	**+ $8**	**6**	**- $6**
Recreation - blocks	**6**	**$0**	**3**	**+ $4**	**10**	**- $3**
Adjusted rental - $		**$80**		**$100**		**$63**

Table 2 Proportional land rental chart percent relationship (example)

Use – location	Major city	Suburban	Developing	Rural
COMMERCIAL				
Central business	25.00+			
Downtown area	10.00	5.00	2.50	
Standard	3.00	2.00	1.00	.75
Secondary	1.50-	1.00	.60	.50
INDUSTRIAL				
Prime	2.50+	1.75	1.50	.95
Standard	1.50	1.00	.75	.65
Inferior	.75-	.50	.40	.25
RESIDENTIAL				
Prime	1.50+	1.00	.75	.50
Standard	1.00	.75	.60	.40
Inferior	.65-	.45	.40	.25
RURAL AND FARMING				
Acreage close-in	.20+	.15	.10	.05
Acreage distant		.10	.05	.02
Intense farming			.03	.02
General farming			.02	.01-

Table 3 Developmental analysis land residual (example)

Rental income per square foot capitalized at 6 %

Item Land Capitalized

	income	land value
Gross possible income	$24	
Vacancy allowance	-$1	
Operating expenses	-$5	
Net property income	$18	$300
Recapture of building cost	-$12	$200
Land residual income	$6	-$100
Land rent collected	-$5	-$83
Net land income	$1	$17

Table 4 Allocation land percent ratio (example)

Sample Analysis per square foot

Unit number	Total rental	- Building portion	= Land portion	Land factor land/total %
212	$190	$114	$76	40%
321	$181	$105	$76	42%
222	$192	$117	$75	39%
311	$192	$119	$73	38%
Conclusion: indicated land factor				40%

Population Application per square foot

Unit number	Total rental x	Land factor =	Land rental
215	$193	.40	$77.20
305	$185	.40	$74.00
301	$189	.40	$75.60

Table 5 Extraction of land rental value (example)

Per square foot capitalized at 8 %

Item	Land income	Capitalized land value
Gross income	$24	
Vacancy allowance	-$1	
Operating expenses	-$5	
Net property income	$18	$225
Recapture of building cost	-$1	-$13
Land residual income	$17	$212
Land rent collected	-$15	-$188
Net land income	$2	$25

Table 6 Ground rent comparison of leased land (example)

Land Portion per square foot

Unit number	Total per sf	- Building portion	= Land portion
1	$20.00	$10.00	$10.00
2	$20.00	$10.50	$9.50
3	$20.00	$10.00	$10.00

Adjustments per square foot

Unit	Per SF	Location	Traffic	Parking	Adj. SF
1	$10.00	-$0.50	-$0.50	+$0.75	+$9.75
2	$9.50	-$0.25	+$0.50	-$0.25	+$9.50
3	$10.00	-$0.00	-$0.50	+$0.00	+$9.50

Table 7 Subdivision development estimating rental value of land (example)

Total sales proceeds, 50 sites at $50,000	$2,500,000
Discounted at %15 over 50 months	$1,850,000
Subdivision cost, $1,000 per site	$50,000
Development cost, $15,000 per site	$750,000
Sale cost, 10% of gross sale price	$250,000
Rents, interest, carrying cost, 10% of net value	$50,000
Incentive cost and profit, 10% of gross sale price	$250,000
Total costs to complete the development	$1,350,000
Net value of undeveloped land	$500,000
Net value per acre, 12.5 acres	$40,000
Net value per site, 50 sites	$10,000
Annual rental value per site at 10%	$1,000
Annual rental value of 50 all sites	$50,000

Figures

Figure 1 Land Rent Includes Natural Resources but Excludes Buildings and Improvements

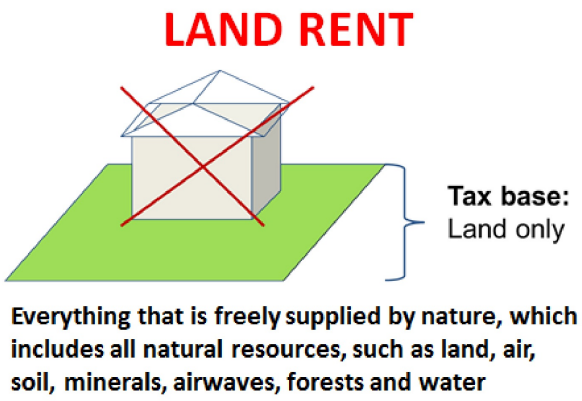


Figure 2 Public Revenue Source, *The corruption of economics*

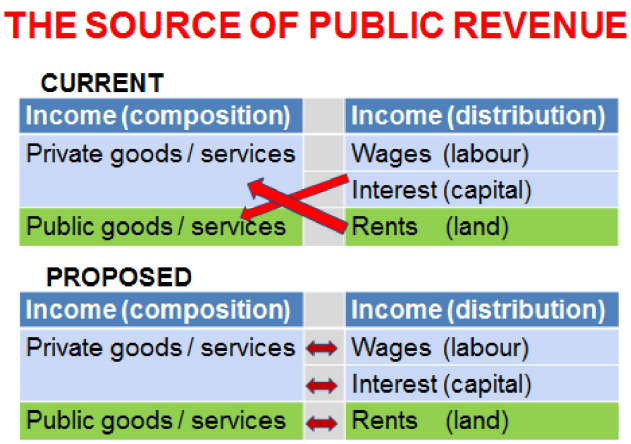


Figure 3 Farm Land Degradation, International Soil Reference and Information Center

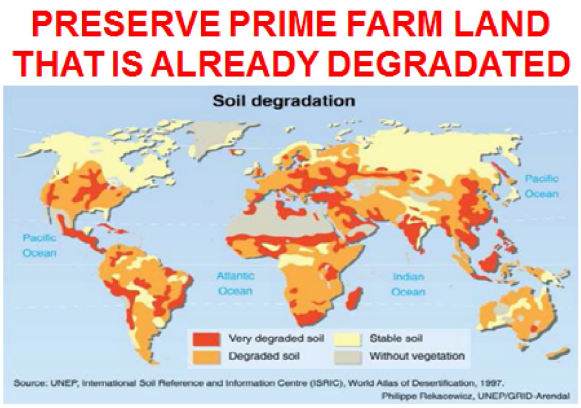


Figure 4 Components of Australian GDP *The Riches-of-Oz*. The Land Values Research Group

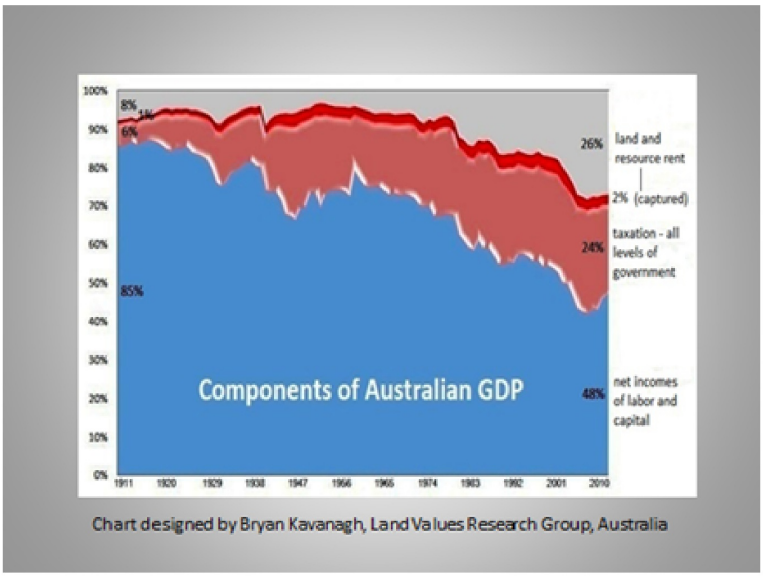
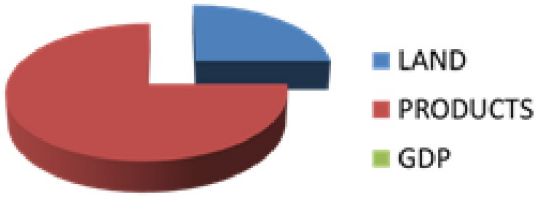


Figure 5 World gross domestic product, International Monetary Fund. (2012)

WORLD 2012
GROSS DOMESTIC PRODUCT



LAND	**25%**	**$**	**18.05**
PRODUCTS	**75%**	**$**	**54.15**
GDP	**100%**	**$**	**72.20**
International Monetary Fund (2012)			$2,527 per person

Figure 6 Harrisburg and California, *Socializing Land Rent, Untaxing Production.* Earth Rights Institute

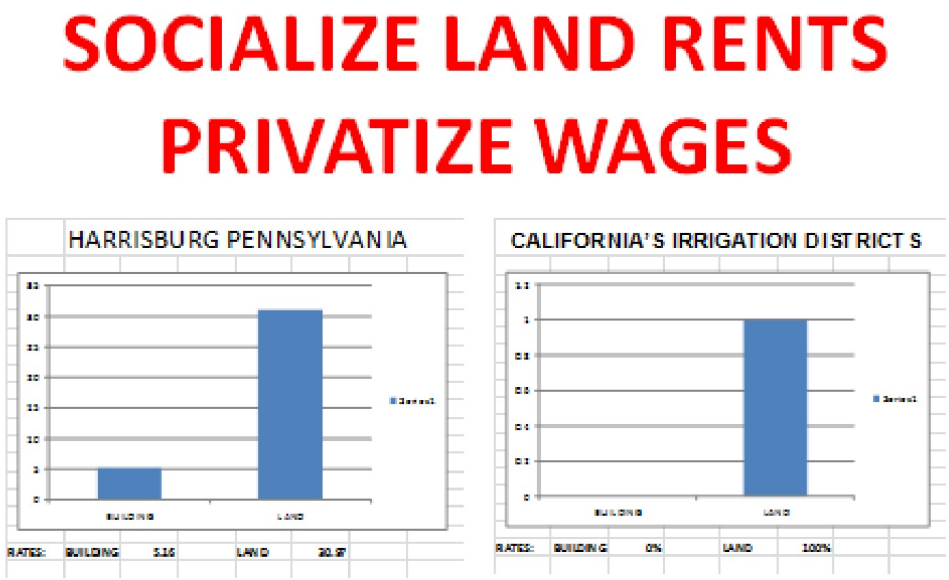
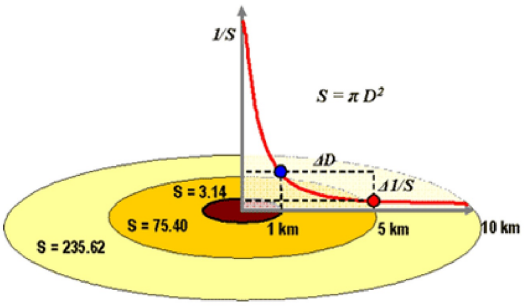


Figure 7 Land Rent Curve Johann von Thünen (1783-1850) – spatial, locational rent diagram side by side

Recent "land value scape" of Johannesburg, RSA prepared by Godfrey Dunkley:

Von Thunen's Land-Rent Curve



SITE VALUE USING GIS TECHNOLOGY IN JOHANNESBURG, SOUTH AFRICA