

# IWC NEWS

## INTRODUCTION TO APPRAISALS

With clients invested in numerous timberland funds located throughout the world, IWC has unprecedented access to appraisals determining the market value of the underlying assets. The many appraisals IWC evaluates on an annual basis has led to a unique understanding of the timberland appraisal industry. The following is a selection of the differing characteristics of forest valuations seen by IWC across its investment regions.

### IWC's Rating and Evaluation System

Why does IWC evaluate appraisals? Since timberland is transacted infrequently, appraisals are the best estimate of market value at a specific date. Appraisal methodologies and concepts differ widely around the globe. Appraisals can have a major impact on the reporting of fund performance, fees paid to fund managers, debt covenants, and property transactions. Therefore understanding the methodologies and assumptions applied, as well as evaluating the appraisal quality and the reasonableness of the derived market value is vital.

- IWC evaluates and rates all third party appraisals provided through the fund managers on an annual basis
- IWC reviewed 87 appraisals in 2011
- A checklist has been developed to ensure appraisals conform to recognized international standards, identifies key data and highlights any omissions

**Table 1**  
Summary of 2010  
appraisal data

Region	2010 Discount Rate	Discount Rate Trend 2009 to 2010	Appraisal Standards	Number of Appraisers	Number of Appraisals Reviewed
US South	5,7 %	Static	USPAP	14	28
US Northwest	6,7 %	Compressing	USPAP	7	9
US Northeast	6,0 %	Static	USPAP	6	15
Brazil	9,8 %	Increasing	USPAP	5	13
Uruguay	9,0 %	Compressing	USPAP	3	5
Chile	7,0 %	Static	USPAP	2	2
Australia	8,0 %	Static	IAS 41	3	3
New Zealand	7,8 %	Static	IAS 41	3	6
Europe	7,3 %	Static	USPAP	1	1
Emerging	12,2 %	Compressing	USPAP	3	5

- If questions arise, IWC engages the relevant fund manager in a dialogue to understand the rationale behind the appraisal and why it was performed in the manner presented.

The benefits of appraisal reviews to IWC and our clients are:

- Monitoring of performance – ensure the value is there
- Input into fund due diligence functions e.g. relevant discount rates, operational costs, land prices, timber prices, management regimes of the subject fund can be compared to data seen in appraisals
- Improved appraisal quality – feedback from IWC has led to changes of appraiser if deemed appropriate
- Increased market knowledge.

The key findings of the evaluation of the 2010 appraisals are summarized in Table 1. The US in general and particularly the US South has the widest appraiser base. There are few appraisers within Europe and emerging markets and these regions are served by international appraisal firms, which are well respected but may lack prior experience in new regions.

In most regions, appraisals conform to guidelines defined by the Uniform Standards of Professional Appraisal Practice (USPAP), as can be seen in Table 1. Oceania is distinct, in that appraisers follow International Accounting Standard 41 (IAS 41) guidelines, which stipulate the valuation of the standing crop of trees only and the projection period is limited to the current rotation. Land values are often separately appraised and added to derive the final value.

IWC sees discount rates increasing in Brazil from 2009 as assets in 'frontier' regions begin to be appraised. Rates are compressing in the US Northwest, Uruguay and emerging markets, but are relatively static elsewhere.

## How are timberland assets valued?

There are three approaches utilized by timberland appraisers to determine market value:

**1. Income Capitalization Approach (ICA)** – the valuation is derived directly from the income producing potential of the property as determined by a Discounted Cash Flow (DCF) analysis. A market derived discount rate is used to discount the net annual incomes. The method is most applicable to properties with mature timber.

**2. Cost Approach (CA)** – this appraisal method assumes that a potential buyer shall not, or should not pay a value higher than the formation/substitution cost of an equivalent asset. The individual components of value; land, merchantable timber, pre-merchantable timber and improvements are estimated separately and are then added together to indicate the total value of the asset. The Cost Approach is considered to be the most appropriate valuation method when the asset consists primarily of young plantations.

**3. Sales Comparison Approach (SCA)** – this approach produces an estimate of value by comparing the subject property with similar, recently sold properties in the vicinity. The sale prices of the most comparable properties with respect to such factors as location, zoning, size, species and age class, set the value range in which the subject will fall. When the number of market transactions is low, the relevance of the Sales Comparison Approach may be limited.

As illustrated in figure 1, the ICA is common to all regions, but in particular Oceania, Europe and Emerging markets. It is the approach most investors use when acquiring properties and therefore most closely models investor behavior. The SCA is used more widely in the US reflecting the greater transparency and number of transactions in the region. South America and at times, emerging markets, place greater weight on the CA, a characteristic of the number of plantations in the establishment phase.

Figure 2 presents the range and average discount rates applied in the ICA for each region. As might be expected the emerging regions have the highest discount rates due to the greater perceived risk of these investments. The US has the lowest due to the maturity of the market. In the US the South has the largest spread because it has the highest number of appraisers, and therefore more differing opinions. The US NW typically has a much smaller spread than shown, normally between 6 and 7 % exclusively, however, one investment is included that is atypical of the average west coast Douglas fir regime, which therefore carries a higher risk.

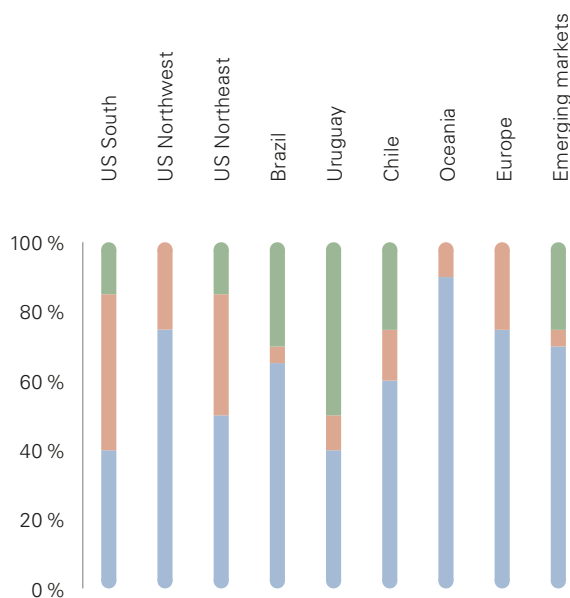
Brazil shows a large spread because of increasing investments in 'frontier' regions, where industry infrastructure and timber markets are immature at present and have higher discount rates. Investments in southern Brazil, which can be considered a mature market, attract discount rates in the lower range.

## Conclusions

IWC's access to appraisal data from around the world confers a significant competitive advantage. The annual evaluation of appraisals benefits IWC and its clients and the process continues to be improved.

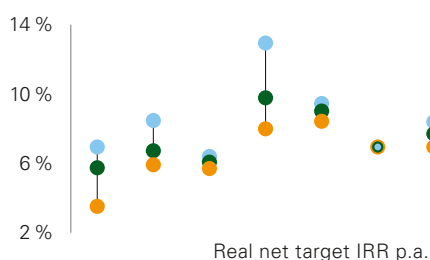
**Figure 1**  
Appraisal methodologies used in the various investment regions in 2010

● CA  
● SCA  
● ICA



**Figure 2**  
Average discount rate and range seen in 2010 appraisals

● High  
● Median  
● Low



## SOIL IMPROVEMENT IN THE TROPICS AND ITS POTENTIAL FOR FOREST MANAGEMENT

This article discusses the potential for improved soil management on tropical land and its ability to lift marginal soils in to a more productive role for the worlds growing population.

At IWC's 20th anniversary, Professor Benjamin Bostick from Colombia University gave a presentation on the opportunities that exist in soil management to include currently degraded and marginal soils in the tropics for commercial production of food and timber. This article will further suggest possible implications for institutional forest investors.

The world's population will reach 9 billion in 2050 according to the UN, with much of the increase happening in Africa. The increased global pressure on land suitable for food and timber production is a considerable challenge for the sustainable management of soils in the future.

Deforestation in tropical countries has escalated over the past many years. As a consequence, soils are depleting at a high rate through soil nutrient leaching, soil structure deterioration, organic matter wash out and erosion issues. This has a huge impact on local livelihoods as degradation of soils limit local possibilities for producing food crops, wood, fruit to eat and, water to drink.

Tropical and subtropical forests are highly sensitive areas because they sustain productivity by efficient cycling of nutrients within biomass. If large amounts of biomass is removed and disrupted, it creates great perturbation of the soil. Research and practice tells us that there is a large potential in applying structured soil management and reestablish natural processes in soil to improve growth conditions for timber and



*Top: Professor Benjamin Bostick speaking about soil improvement at IWC's 20th anniversary. Bottom: Soil analysis in Cambodia prior to teak plantation establishment.*

agricultural products. Large fallow land is available globally. Former tropical forest lands are the largest land area of potentially arable land on earth, Buresh et al., 1997 estimates over 2 billion hectares globally. FAO estimates that roughly 100 million hectares of forestland was lost from 1990 to 2005, some of this land is today used for production, but most lies fallow.

An example of degraded land availability is the Brazilian Cerrado (tropical savanna) roughly 205 million hectares in size and covering roughly 20% of the country. Most of these soils have low natural soil fertility, and low pH.

Through the 90's the Brazilian research institution Embrapa initiated a huge effort to change the Cerrado, then considered as being unfit for farming, in to some of the highest productive farming land in the world.



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**The following initiatives were applied to change the property of the soils:**

- 1) Industrial quantities of lime were poured onto the soil to reduce levels of acidity.
- 2) Researchers found varieties of rhizobium, a bacterium that helps fix nitrogen in legumes\*, which were spread across the Cerrado and reduced the need for fertilizer substantially.
- 3) Researchers created a crossbreed of an African grass called Brachiaria. The Brazilian crossbred variety would produce 20-25 tons of grass feed per hectare, many times what the native Cerrado grass produced, making possible the enormous expansion of Brazil's beef herd.
- 4) Researchers created crossbred varieties of soya beans that could tolerate the acid soils and hotter weather compared to soy beans native environments in temperate climates.

\* Legume plants from the Fabaceae family are notable for their ability to fix atmospheric nitrogen, thanks to a symbiotic relationship with bacteria (rhizobia) found in root nodules of these plants.

The above applications to the soils chemical constraints has made the productivity of these soils among the highest in the world (Bostick 2011). As a result, the increase in Brazil's agriculture production has been stunning. Between 1996 and 2006 the total value of the country's crops rose from 23 billion USD to 108 billion USD, a 365 % increase.

Today, the Cerrado is also used for Eucalyptus and Pine fiber production targeting the cellulose industry and charcoal for the steel industry. In fact, wood production is the second largest activity on the Cerrado.

This is just one example of how research and proper management of soils can change a once thought of marginal land bank in to highly productive land. It also shows the vast potential and value creation for proper soil management in timberland. Here some of the same initiatives can be applied with modifications.

In forestry, good results are usually obtained when fertilization is combined with other practices such as weed control and proper site

preparation. This is especially true on sites where grass competition has invaded after forest clearing and must be controlled. It requires research and practical experience to determine how much fertilizer is needed on different soils to make sufficient nutrients available for trees. This will be different on each site and depend on species and water availability.

Today we know that significant areas of fallow tropical land are available for forest establishment. While soil management is one limiting factor for attracting timberland investors on to marginal tropical land, other limiting factors still exist. These are, among others, inadequate infrastructure, secure and clean land tenure contracts with governments, social impact assessments and livelihood registration.

The potential is huge to utilize marginal land in the tropics for timber production. Soil management is only one of many constraining factors for institutional timberland investors to be able to turn these soils into proper soils for timber production.



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