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Using auctions for conservation contracts to protect Queensland's vegetation: lessons from the Vegetation Incentives Program

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Introduction

There is increasing interest in Australia in the use of auctions for conservation contracts, but there is still much to be learnt about ensuring this economic instrument is effective and efficient. Auction theory and pilots have demonstrated that there are potentially large cost savings to be gained from allocating natural resource funding through competitive tender mechanisms. The Queensland government accordingly decided to use an auction mechanism to distribute a \$12 million incentives package that accompanied changes in vegetation legislation in 2004. The resulting Vegetation Incentives Program (VIP) is aimed at encouraging protection and management of high value non-remnant vegetation. The program has been run in three phases, with the first round covering the Southern Grazing Lands region, the second round covering the rest of the state excluding South East Queensland, and the third round currently running in South East Queensland (see Figure One). Some preliminary lessons about the use of auctions for conservation contracts after the conclusion of the first two phases of the VIP in 2005 are presented.

Methodology

The initial analysis presented in this paper is the result of observations of the VIP's design and implementation. Additionally, written questionnaires were sent to all participants who were invited to submit a full tender presenting author's PhD research. At this time only the first two rounds have been covered. Out of the 45 participants, 24 returned the questionnaire, which gave a response rate of 53.3%. Other information has been gathered through semi-structured interviews with field staff. Econometric analysis will be possible once more data has been gathered from the last phase of the VIP.

Background theory

Auction theory can be applied to the problem of funding natural resource management (NRM) on private properties. Currently, an adequate market for providing public goods from private land does not exist, resulting in an under-provision of environmental goods and services. Auctions can help form a quasi-market for environmental public goods (Latacz-Lohmann and Van der Hamsvoort, 1998 p335). This market has several distinguishing characteristics, such as only having one buyer (usually the government) and many sellers with a wide range of opportunity costs (Latacz-Lohmann and Van der Hamsvoort, 1998 pp335-337). There is also information asymmetry present between the sellers and purchaser of the environmental services. As in standard procurement auctions, in a conservation auction the bidders with the best tenders win the contracts. Winning bids are chosen on a best ecological value for money basis. This means that price, the ecological significance of the property and sometimes the management actions offered (or the ecological change expected) are used to choose the winning bids. An environmental benefits index is usually established that allows the different bids to be compared. The groundbreaking Victorian BushTender trials led to an increased interest in the mechanism (see Stoneham *et al.* 2003 for information on BushTender) and on-ground pilots across the country are reporting interesting results (see e.g. Bryan *et al.* 2005 and Gole *et al.* 2005). The most significant benefit to using an auction mechanism to distribute funds is the potential cost saving from using competition to encourage truthful cost revelation.

Background to the Vegetation Incentives Program

In April 2004, the Queensland government passed the *Vegetation Management and Other Legislation Amendment Act 2004* to end broadscale landclearing of remnant vegetation in Queensland by December 2006. This legislation was introduced in response to growing concern over the high rates of landclearing occurring in Queensland. A \$150 million financial assistance package accompanied the legislation, including \$12 million for incentives for improved protection and management of native vegetation not protected elsewhere under the legislation. An auction mechanism was chosen to distribute the \$12 million set aside for incentives.

Design of the program was conducted within NR&M. Some elements of the design, such as the use of a covenant to secure perpetual protection of areas of under the VIP, had been pre-determined largely through a political decision making process. Planning time was limited to approximately one month, with no opportunities to consult with likely participants or develop a complex mechanism. For example, there was insufficient time to prepare an ecological benefits index.

Landholders in six regions across the state were able to participate in a tendering process to protect (via a covenant) and manage non-remnant vegetation on their properties (see Figure One). These areas were made up of amalgamated bioregions, which allowed for easier comparison of tenders between properties. Cape York was excluded from the program before design commenced. Greening Australia was chosen through a tender process to deliver the VIP across Queensland.

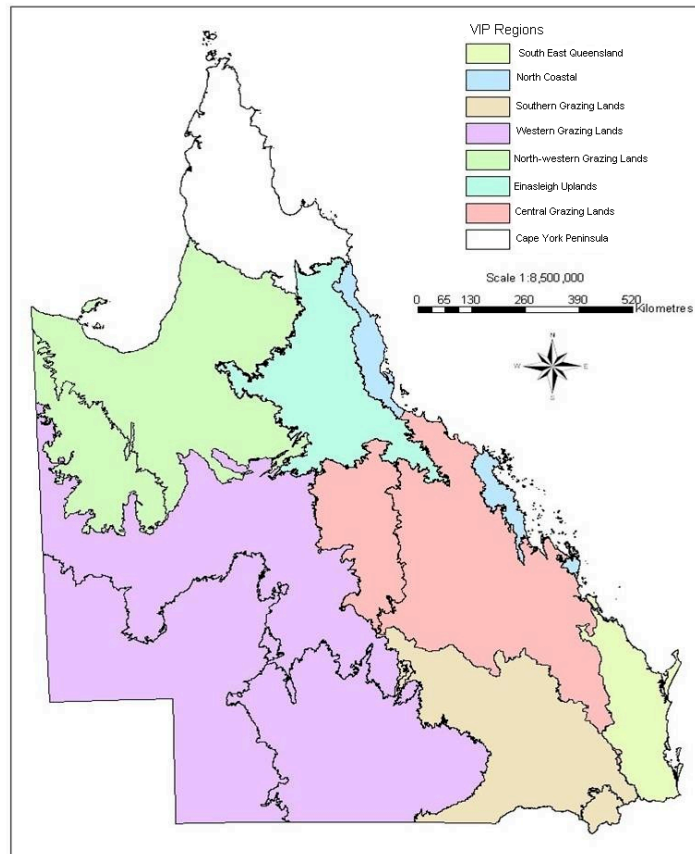


FIGURE ONE: MAP OF VIP REGIONS

Round one design and results

The covenant used in the first phase was to have been permanently attached to the land title and registered with NR&M. It severely restricted the use of the land covered by the covenant – for example, there could be no grazing in the covenant area or application of fertilisers, herbicides or pesticides and imposed ongoing land management requirements on landholders. The specific management actions the landholder committed to undertake were outlined in a five year management agreement that was then attached to the covenant. This management agreement allowed for easing of some of the restrictions in the covenant, but these restrictions would be reinstated at the end of the term of the management agreement.

Each patch of vegetation submitted was assessed against a set of ecological criteria by a panel of experts using information from maps, the site visits and local knowledge. However, no formal environmental benefits index was established due to concerns of some staff with the concept and lack of adequate design time. Instead, a series of decision rules were used to select properties. The decision rules were meant to lead to the formation of an “A list” of properties. The original intention was to then sort these A-list properties into groups where it could be assumed that each property was equally ecologically desirable. Then a simple \$ per hectare calculation could be undertaken to assure value for money, with the lowest cost/high value properties being funded first, until the budget was exhausted.

Due to delays in the roll-out of the program, round one of the VIP ran from late 2004 to mid 2005. After an extensive communications and media campaign, 76 enquiries were made but only 21 expressions of interest (EOIs) were received. Of the 16 landholders invited to continue, only 8 bids were submitted. Only five properties made it to the “A-list”.

As most participants submitted very high bids, the assessment of “value for money” undertaken by NR&M was critical. The original concept of splitting the properties into groups where properties within the group are equally desirable could not be applied in this situation. Not only were there only five properties in the “A-list”, the expert panel had given each property a different ranking and had indicated that each one had a different ecological value. These rankings were not relative so it was not possible to say how much more desirable one was than another. This complicated the assessment of value for money, as a cost-benefit ratio could not be assessed. An approximate reserve price was calculated using valuations on the unimproved capital value of the land, and advice on the commercial value of the land gained from a professional land valuer. These figures were compared to the amount

the participant was requesting per hectare for the covenant.³ None of the five shortlisted properties were considered good value for money. They had covenant costs ranging from 7.7 to 65.8 times the unimproved land value, 3.2 to 6.7 times the commercial land value and 1.8 to 6.9 times the estimates of capitalised maximum profits that could be gained per hectare.

Changes in round two and results

Given the failure of the first round of the VIP to elicit good quality bids, some changes were introduced during the next round. The most fundamental change was that landholders had the choice of the original permanent covenant, a Nature Refuge (a more flexible covenant administered by the Environmental Protection Agency), a limited term covenant (where the covenant applies until regrowth reaches remnant status and is then protected as such by the Vegetation Management Act) or making a declaration over the area (where the area is mapped as remnant vegetation on a property management plan and protected accordingly).

Unfortunately, these changes were unable to be implemented until after EOIs had already been received. A management agreement that specified management actions and payments for five years was still required in conjunction with each option. A revised scoring system was created that was much closer to an environmental benefits index than had been employed. However, this was still an ordinal scale that did not reflect the panel's relative preference for each property. For example, a property that received a score of 40 was not considered to be twice as good as a property with a score of 20.

The second round of the VIP covered the rest of Queensland excluding the South East Queensland region. Across this area 87 EOIs were received. The majority of the EOIs came from the North Coastal region. A panel met to apply the eligibility criteria, and 12 were

³ Participants split their bids into the money for the management actions and the covenant as this simplified tax issues.

eliminated, primarily because they were either ineligible remnant vegetation, too isolated or too small. Out of the remaining 46 invited to submit a tender, 38 chose to do so. Thirty-one applications were from the North Coastal region.

Two assessment panels were held in late November, one to grade the North Coastal applications and another to review the other regions. The North Coastal panel separated the bids ranked by score into four groups, with the top two groups being declared applications of state or national significance. Only two properties were determined to be acceptable without material changes to their management plans in the other regions.

The applications were then assessed as value for money by NR&M staff. This process involved two steps. Following the precedent from the first Southern region, the first step used a reserve price based on land values to assess the covenant \$/ha tendered. Some properties were deemed poor value for money on these grounds. Given reservations about the design of the VIP and the large budget for the region, it was decided to introduce a second reserve price for the management actions bid. This was intended to allow for good quality applications to be selected in this iteration of the program and yet allow funding for a future program. The reserve price was set at a natural break in the applications where prices began to rise sharply. The budget for the region still allowed for all of the shortlisted properties to be financed without having to fund in order of \$/ha as was originally planned.

Discussion

The first problem with the first two rounds of the VIP was a perceived low participation rate. Anecdotal and preliminary survey results indicate the key cause of the low participation in

round one was probably the strict requirements of the covenant. Greening Australia reported widespread antagonism to the covenant. The level of requirement under the covenant was more akin to what would normally be used to protect very high value ecological sites, not the sites eligible for the VIP. There was no guarantee that the state government would be willing to renegotiate a management plan after the first five years. This meant that the landholder faced the risk of carrying out management actions required under the covenant without ongoing financial assistance. A related risk was that any productive activity that had been permitted under the original management plan might not have been permitted without a new management plan.

The participation rate for the second round of the VIP was far higher than for the first round. However, this higher participation was dominated by the large number of applications from the North Coastal region and particularly conservation properties in the Atherton Tablelands. There are presumably other communities with similar characteristics in Queensland. Another possible factor could be the presence of the GA project officer in Atherton. The staff member was well known and trusted in the community, and so may have had an advantage in encouraging participation in the VIP. Contact with the Atherton based GA officer and EPA's Nature Refuge officer were the most common forms of knowledge about the program amongst participants in the North Coastal. This may emphasise the role of trust and ongoing relationships with landholders to overcome constraints of untested policy instruments.

The changes to more flexible protection options for the second round only occurred after EOIs had already been received. Most potential participants would have been informed of the strict requirements of the original covenant. As such, it is possible that the participation rate would have been higher had these changes occurred earlier. Although the expanded options

probably assisted with keeping participants in the program, and reducing bid levels, the mid-program introduction was not optimal. Some participants reported feeling confused by the changes. For example, one survey respondent noted, “this has been a DNR&M ‘make the rules up as you go’. At my submission of tender there was two options for covenants, within days there were 5 options!”

Widespread distrust and uncertainty may have lowered the participation rate. The timing of the program was inopportune, as it immediately followed the introduction of very unpopular changes to vegetation legislation in Queensland. There is widespread distrust of NR&M and the state government in general. VIP field staff reported receiving negative feedback about NR&M when presenting information on the VIP to landholders.

The highest bid levels were recorded in round one. Once again, the key cause was probably the strict covenant. Eighty-two percent of the total cost of the five ecologically acceptable bids in the first round was associated with the covenant. It is likely that the high opportunity cost imposed by the strict requirements were translated into the high bid levels. The aforementioned risks probably further inflated bids.

The bids for the covenant were far lower for the second round. In the North Coastal region, a third of applicants requested no payment for entering into a covenant. Overall, only 15% of the total cost was made up of the covenant bids as compared to 82% for the first round. The lower bids could reflect the wider range of less restrictive options open to applicants, the conservation ethic of the landholders, or both. Thirteen of the 31 applicants owned properties solely for conservation purposes, and an even greater proportion had considerable levels of off-farm income. Seventy percent of respondents in the North Coastal had an off-farm

income of greater than 60% of total income, and only one respondent had no source of off-farm income. Greening Australia staff even reported that the covenant was seen as an incentive to participate for some landholders who were seeking permanent protection for their vegetation. Interestingly, the altruistic applicants who did not require any money for entering into a covenant all fell within the top two groups as ranked by ecological significance. The better condition of the properties could be a result of the prior conservation work of the landholders, especially given their choice not to farm their land. Even for the rest of the state, bid levels were far more reasonable than in the first round. Fifty-seven percent of the total cost for the rest of the state was made up of covenant costs.

A perceived drop in land value was probably an influence on bid levels. Thirty percent of survey participants felt that participating in the VIP and placing a covenant on their land would decrease their land value significantly, while another 20% felt it would decrease the value slightly. Twenty percent believed it would have no impact on land value. Only 8% believed it would raise the value slightly. This general belief in a negative impact on land values was borne out anecdotally by GA staff reports. Over three quarters of survey respondents said that the requirement for a covenant was important or very important when forming their bid.

The emphasis on the potential financial returns to landholders in the literature was designed to appeal to landholders who may not have chosen to otherwise participate in an NRM program. However, it may have resulted in the perception that higher bids were acceptable, particularly when taken in conjunction with the widely advertised \$12 million budget. The widespread resentment about lack of adequate compensation for not being able to clear remnant vegetation may have further increased bids.

A possible theoretical benefit of using an auction mechanism is that more people will be attracted into the program than with another fixed price (or cost-share ratio) program. However, in this instance only 23% of survey participants had not previously participated in a government NRM program. The two most common programs for survey participants to have been involved in were Natural Heritage Trust funded activities and FarmBis training (both 35%). Twenty-seven percent had participated in Land for Wildlife, while two participants had already been involved in a Nature Refuge covenanting program.

Additionally, preliminary analysis seems to show that the VIP has attracted mainly conservation-minded people into the program. The reason for participation that elicited the most support from survey participants was the statement “it’s important to Australia to conserve the bush”. 95% of respondents stated that it was very important or extremely important to their decision to participate. Similarly, over 90% of respondents said that the public benefits from participation were a very important or extremely important influence on their bid level. An abridged version of the widely used New Environmental Paradigm (NEP) scale was used to measure the environmental attitude of respondents (Dunlap *et al.* 2000). In this instance, there was a spread of responses, with the average participant being pro-environment. Finally, 70% of respondents identified themselves as being active members of Landcare during the last three years.

It was hoped that participants would enjoy the opportunity to develop their own bid without restrictive predetermined cost-sharing rules. However, only 15% of respondents indicated that being able to set their own price was important in their decision to participate. Greening Australia field staff reported that landholders had great difficulty in developing a bid price for

the covenant. Many were used to costing management actions such as fencing, but the concept of pricing opportunity cost was new and confusing.

Participants generally appeared satisfied with their experiences with the VIP. Eighty-three percent said they would participate again in a similar program if they were not successful in obtaining funding from the VIP.

The management plans of some participants were of a lower quality than others, which led to lower scores. Equity demanded that if one person could redo his or her plan, everyone should have a chance to, so no renegotiation was allowed. It is interesting to note that nearly all (84%) of survey participants developed their management plans largely independently of the GA assistance available. Only four respondents said that they and the GA project officer developed the plan together. This lack of expert input may have resulted in some properties having sub-optimal plans. This risk would have been exacerbated by the lack of clear guidelines stipulating eligible activities.

Lessons

The first lesson from the first round of the VIP is to carefully select the instruments to be used. As discussed, the requirement for a strict covenant probably contributed to the low participation rate and almost certainly inflated the bids. Recent research in Tasmania concluded that land use restrictions were the most important aspect of incentive programs to landholders (I. Van Putten personal communication, 2005). Nearly everyone involved in the VIP's design and implementation were supportive of the need for permanent protection but were uncertain as to how this should be achieved. Similarly, an auction mechanism open to

any landholder with non-remnant vegetation in Queensland (outside of Cape York) may not have been the best option for conserving high quality regrowth. A more targeted approach may have been more appropriate.

Another key lesson from the VIP has been the importance of sufficient time for designing the auction. Auction design needs to be adapted to the situation in order to avoid sub-optimal outcomes. As Klemperer (2004 p122) concludes, “local circumstances matter and the devil is in the details”. Design time was particularly important given that a conservation auction had not been run on such a large geographical scale before and the limited amount of readily accessible ecological information in Queensland. These circumstances meant that an ecological benefits index could not be easily constructed. Similarly, it would have been useful to run a small pilot to test the mechanism prior to implementation across the large Southern region. Increased time and effort in the mechanism design probably would have led to a more efficient allocation of public funds and better conservation outcomes.

Problems with the management plans in both rounds reflect the importance of clear guidelines for staff and participants. In order to save time and avoid needlessly rejecting good applicants, eligible actions should be clearly outlined in staff training and participant information sheets. Participants should be encouraged to have whole property plans so as to avoid piecemeal management plans that do not allow for best management practice and satisfy the expert panel. These guidelines should not change throughout the process so as to minimise confusion for participants.

The importance of a method of explicitly comparing ecological value was reinforced by the difficulties experienced when deciding if properties represented good value for money. As

indicated earlier, the ranking of properties did not reflect their relative value and so it was difficult to establish which offered the best ecological value for money. The \$/ha measure was not a sound substitute for a robust environmental benefits score. Although Queensland's limited ecological information and large size make the development of a practical metric more difficult than in some other states, it is worth investing in the development of one for future programs.

A reserve price can be very important. The substantial budgets for each regions would have allowed for all applicants to be funded if a reserve price had not been set. In the absence of environmental market data, it is difficult to know where to set a reserve price. It is possible to try to estimate the opportunity cost of participation through estimating lost income gained, or through valuing the public benefits generated by the project. Additionally some form of land value can be the basis for the price, as is common when values are set on permanent conservation easements in the United States (Lassner 1998). As more conservation tenders are carried out, the data generated will be useful for setting reserve prices for future programs.

Conclusion

There are many lessons to be learned from the initial stages of the VIP. It is important that the apparent failure of the program to produce significant on-ground outcomes in the first round does not reflect solely upon the auction mechanism itself. Rather, it is a reminder that careful design and implementation is crucial when using market based instruments. The second round of the VIP was more successful in achieving the aims of the program than the first round. However, this success was driven by the high level of participation, and altruistic behaviour, of the North Coastal region. There appears to have been limited success in

attracting mainstream landholders into the program. Many of the applicants in the North Coastal region were not landholders whose livelihoods depended on the commercial use of their land or were threatened by the changes to the vegetation legislation. Participants appear to have been motivated by altruism rather than being converts to improved NRM. If the under-representation of purely production-focused landholders continues, the potential effectiveness of these incentive programs may be limited. It will be interesting to see if the last VIP region of South East Queensland, with its high level of lifestyle properties, will produce comparable results.

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