Green Gold of Hachioji

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1. Introduction

Nowadays humanity faces big problems with saving the environment.   In order to solve this problem, there is the option to economically evaluate nature itself to adapt the spiritual value of nature to the economy of the region. To make this concept work, first of all, there is a need of having a method to calculate the actual value of nature. Thus, in this research paper, we coordinate many other publications and theories of nature calculation with an example based on the forest in order to demonstrate the possibility of it.

This study focused on the City of Hachioji, Tokyo, Japan. Hachioji City has a large forest area compared with other cities in Tokyo, but in these 40 years, the forest area has significantly reduced. The trees that are cut down are used in many ways and are a very important resource for our society. In contrast, the trees have a non-use value that is not visible. So, how much is the non-use value of forests that Hachioji City has lost in the last 40 years? In this research, the paper will put an economic valuation on Hachioji City's forests and also look at the amount of loss of the economic valuation over the last few decades.

2. Methodology

First, we look at research written by C.Y. Jim and Wendy Y. Chen and the content of this paper is to explore the monetary value of the non-priced benefits of the urban forest in Guangzhou City, south China. The urban forest has the ability to absorb carbon dioxide, make beautiful views, reduce noise, and provide recreation which is beneficial for humans health. The research calculates the monetary value of these functions. The paper applies a Contingent valuation method using willingness-to-pay from residents of Guangzhou City. It is one of the most well-known methods for estimating forest evaluation. Also, the calculated number is credible by doing a careful selection of variables (C.Y. Jim, Wendy Y. Chen, 2006). Also, we estimate the value of forests lost over the past 40 years, by using this WTP.

Next, this paper evaluates Hachioji City`s forest from the tourist's perspective. Urban forests are also very important for tourist satisfaction because, as mentioned above, urban forests have a relaxing effect so it helps people who are stressed out from city life spiritually. Previous research estimated the monetary valuation of tourists in Savannah, Georgia, USA. The research is also conducted by the contingent valuation method. We use the tourist's WTP (Willingness To Pay) calculated from this paper to estimate the forest valuation of Hachioji City.

3. Result

As a result of the first investigation, it was estimated that the average willingness to pay was about 360.01yen/person/month. It can calculate the whole Hachioji resident's willingness to pay for the urban forest by multiplying the WTP and 561.6 thousand which is the Hachioji population in 2020. By doing this operation, The WTP of Hachioji City residents is 202.2

million yen per year. Table 1 shows the transition of Hachioji City's population in these 40 years. To multiply this population each year, we can find out the forest valuation of Hachioji City in these 40 years. As a result of this Hachioji City's forest valuation during these 40 years is about 7.389 billion yen. Figure2 indicates the transition of forest area and shows the amount of reduced forest area in Hachioji City. In 1980 there was 9953ha of forest area in Hachioji City, but in 2015 there was only 7815ha. It decreased by about 2138ha and the forest area in 2015 was about 0.783 times larger than in 1980. The value of forests lost over the past 40 years can be calculated to be 1.603 billion yen. This figure was generated by multiplying the 7.839 billion yen (the total forest value of these 40 years) by 0.217. The figure of 0.217 is the proportion of 2118 ha of the forest area lost in 40 years taken as a percentage of 9953 ha which is the forest area of 40 years ago. Hachioji City has temporarily gained a high utility by cutting down trees, but has actually lost a tremendous amount of money, 1.603 billion yen.

The second prior research calculated the willingness to pay tourists at $2.10/person/year (S. Majumdar, 2011). The research is also conducted by the contingent valuation method. Since Hachioji City receives approximately 8 million tourists each year, multiplied by the WTP, travelers feel a value of 2.515 billion yen/year. This figure is attractive to Hachioji City, which has seen slow growth in tourists. In other words, the more urban forests are planted, the city can be more attractive for tourists.

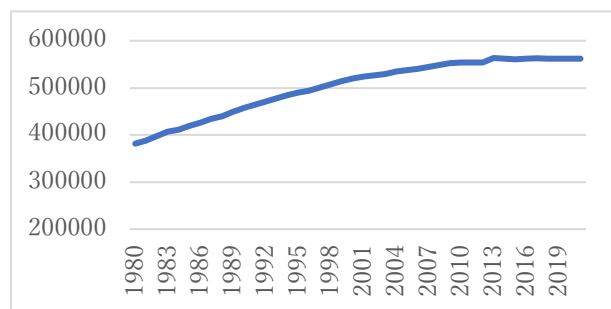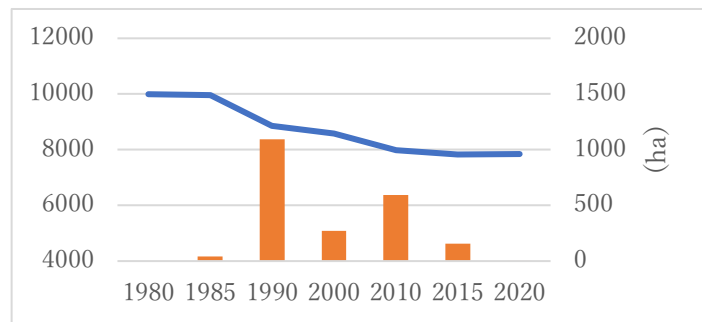*Figure1:* The population transition in Hachioji City

Figure1: The transition of total forest area and its reduction in Hachioji City

4. Conclusion

In conclusion, in order to effectively save the environment and keep the level of the economy in its current position, humanity needs to evaluate the ecosystem and integrate it as value into the economy. By using contingent valuation methods based on willingness-to-pay from residents of Guangzhou City and the monetary valuation of tourists in Savannah, Georgia, USA we calculated the nearly 1.603 billion yen lost in 40 years. In other words, Hachioji city, annually, lost 1.603 billion yen by cutting or in some way destroying the forest. According to these data it became clear that if our society would count nature not as a resource but as currency itself we could save our nature and keep it evaluated not only spiritually but materially. In order to prove our theory, we will continue the research on this vector and make calculations of forest cost by ourselves using the Google earth engine and take the questionnaire to collect databases and estimate accurate data for Hachioji City.

References

https://www.sciencedirect.com/science/article/pii/S0264275109000456 (2009 August)
https://www.mdpi.com/2071-1050/12/11/4784 (2020, June 11)
https://www.mdpi.com/2071-1050/12/11/4784 (n.d.)
https://www.sciencedirect.com/science/article/pii/S0921800909004650?ref=pdf_download&fr=RR-2&rr=75b23b9248e5f8c3 (2009, November 12)
https://www.sciencedirect.com/science/article/abs/pii/S1618866711000641 (2011 July)