A STUDY ON DEVELOPING QUANTITATIVE ENVIRONMENTAL VISIONS FOR MUNICIPALITIES

Gomi Kei

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1. INTRODUCTION

It is necessary for municipalities to establish environmental future visions as goals to take effective environmental measures. The purposes of this study are, to propose a method to develop such future visions and to show an application to Shiga prefecture as an example. A set of tools to estimate quantitative aspects was also developed. The target year is 2030 and environmental target is GHG (40% reduction compared to 1990) and achievement of environmental quality standards of Lake Biwa.

2. Method

The flow of the method proposed in this study is shown in figure 1. After setting of framework and scenarios, social and economic condition such as economic activity level, industrial production, life and work time, transport demand, commercial floor area and land use are estimated. Based on those activities, required environmental measures to meet the targets are defined. A set of those estimated results and action proposal to achieve the targets is the term "environmental vision" here.
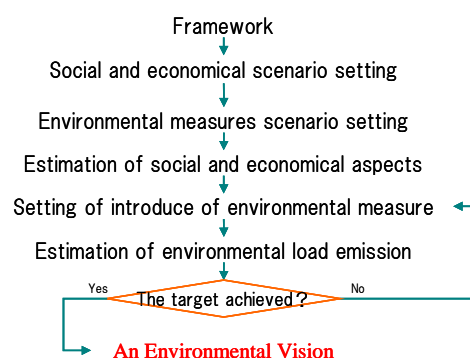

Figure 1. Flow of the method

3. SCENARIOS AND RESULTS

Two scenarios with different development directions are created. In "A" scenario, people seek self-fulfillment through their jobs, and economic growth is relatively high with rapid technological innovation. In contrast, people in "B" scenario balance work and life and seek spiritual wealth with mild economic growth. The results of main social and economical indicators are shown in Table 1. Counter measures are assumed respectively, and it was found that the targets are almost achievable in both. For GHG reduction, in A, faster technological innovation and development of compact cities are important. In B, diffusion of renewable energy and behavior change like modal shift are heavily required (Table 2). To reduce nutrient load to Lake Biwa, investment for social infrastructure should be promoted in A. In B, counter measures which approach natural land use play main roles. This information would be quite useful in discussion and implementation of environmental policies. If the tools are utilized in policy making process, they will contribute to make policy making process more effective and efficient.

Table1. Results of main social and economic indicators

	A	B
GDP growh rate (%/y)	1.44	0.73
Family number (1000 famiies)	521	460
Production (bill.Yen)		
Primary industry	94	276
Secondary industyr	10510	8036
Tartiary industry	6883	5627
Passenger transport demand (Mill.p・km)	15579	16101
Freight transport demand (Mill.t・km)	4921	4220

Table 2. Contribution of measures

	A	B
Power generation fuel change	598	351
Lifestyle change	-39	56
Technological innovation	874	531
Fuel mix change	126	255
Compact citie	91	51
Modal shift	47	132
Total	1697	1376
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