

WHAT IS THE SOCIOECONOMIC IMPACT OF THE TUCURUÍ DAM ON ITS SURROUNDING MUNICIPALITIES?

PROBLEM

Hydroelectric energy is known for being renewable, clean, efficient and harmless in comparison to other nonrenewable energy sources. Nonetheless, the installation of a hydroelectric power complex (HC) in places, such as the Amazon, have proven to cause land cover changes, and alter local population dynamics. Issues like migration and city expansion can cause economic, social and cultural impacts locally, while the benefits are seen in other regions.

MAIN OBJETIVE

The main objective of this study is to evaluate the socioeconomic indicators of the municipalities directly affected by the Tucuruí HPC.

PROPOSAL

The study took into consideration three scenarios: the post-inauguration of the HC in 1988 (phase I), the beginning of construction in 2000 (phase II), and the completion of the Tucuruí HC in 2010 (phase III). Two types of multivariate analysis were conducted: the principal component analysis and cluster analysis, in order to identify the variables related to quality of life, and to be able to group the municipalities which have a similar quality of life.

RESULTS

Table 1. Correlation coefficients between the original variables (*) and the main components, of the 1991, 2000 and 2010 scenarios.

Variables	1991			2000			2010		
	C ₁	C ₂	Order	C ₁	C ₂	Order	C ₁	C ₂	Order
ANA	-0.50	0.72	14	-0.85	0.34	12	-0.71	0.32	12
UZA	0.95	0.26	4	0.84	0.52	13	0.76	0.37	11
LEAB	0.93	-0.19	5	0.97	-0.15	3	0.84	-0.52	10
CPEISE	0.95	0.18	2	0.97	0.12	2	0.91	0.03	5
HDIE	0.99	0.12	1	0.99	0.06	1	0.94	0.11	4
HDIL	0.93	-0.20	6	0.96	-0.15	4	0.85	-0.51	7
HDIR	0.85	-0.38	11	0.87	-0.38	11	0.91	0.25	6
CSEITE	0.95	0.20	3	0.91	0.35	8	0.94	0.21	1
IMR5	-0.92	0.21	7	-0.96	0.19	6	-0.84	0.51	8
IMR	-0.92	0.21	8	-0.96	0.19	5	-0.84	0.52	9
PFA	0.91	0.13	9	0.93	0.25	7	0.94	0.27	3
TP	0.71	0.68	13	0.50	0.85	14	0.68	0.32	13
GDP	0.88	-0.33	10	0.90	-0.30	10	0.94	0.24	2
TFR	-0.84	-0.48	12	-0.90	0.05	9	-0.61	-0.70	14
% Variance	78	13		81	12		71	15	
% Variance Acum.	78	91		81	93		71	86	

Table 2. Main components of the municipalities and order of the "life quality" indicated by factor 1 (C₁ and C₂) of the 1991, 2000 and 2010 scenarios.

Municipality	1991			2000			2010		
	C ₁	C ₂	Order	C ₁	C ₂	Order	C ₁	C ₂	Order
Breu Branco	-0.55	0.26	5	-0.18	-0.32	5	-0.19	-0.05	7
Goianésia do Pará	-0.92	0.16	6	0.29	-0.79	4	-0.34	-0.50	4
Itupiranga	0.21	-0.99	3	-1.52	0.45	7	-1.23	0.29	5
Jacundá	-0.35	1.54	4	0.89	-0.25	2	0.72	-0.35	2
Nova Ipixuna	-0.71	-0.20	7	0.58	-1.19	3	0.70	-1.62	6
Novo Repartimento	0.30	-1.44	2	-1.14	0.21	6	-1.11	0.65	3
Tucuruí	2.02	0.66	1	1.07	1.88	1	1.45	1.58	1

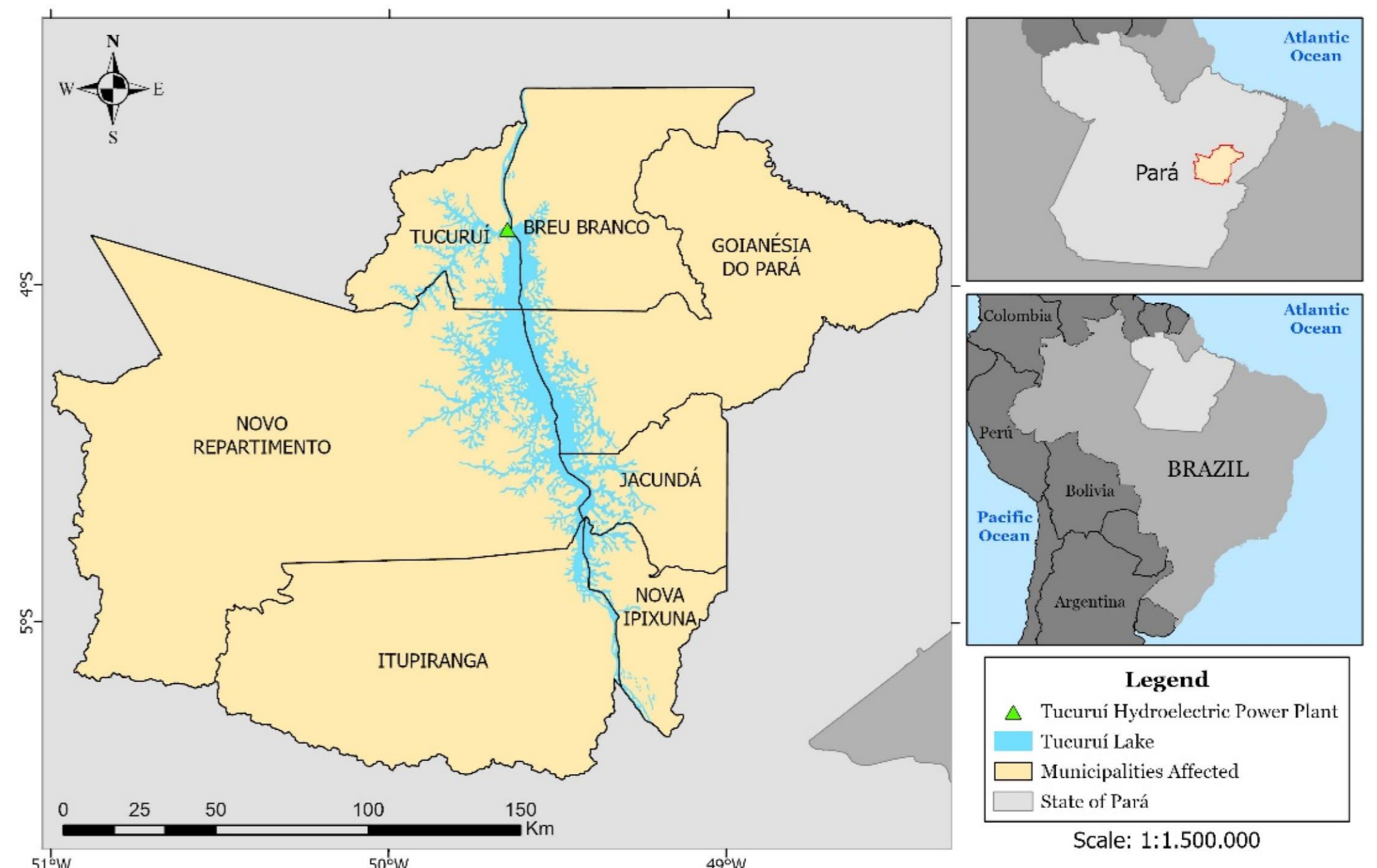


Figure 1. Tucuruí Lake and the seven municipalities affected by the reservoir.

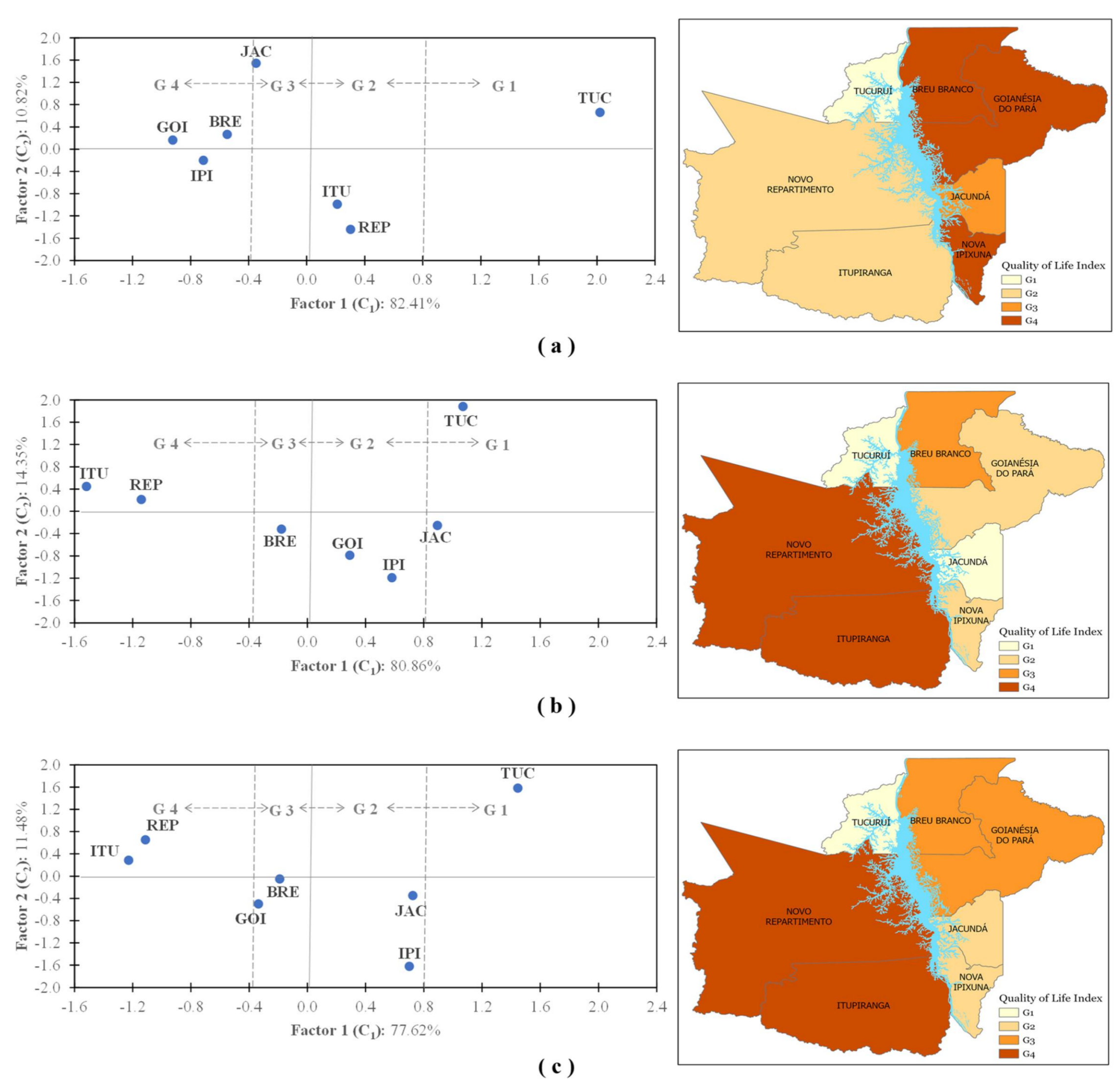


Figure 2. Ordered pairs graph of the seven municipalities affected by the reservoir, based on the two factors resulting from the principal components analysis, between the group of C₁ variables, and clusters for the years (a) 1991, (b) 2000 and (c) 2010.

CONCLUSIONS

- Goianésia do Pará, Nova Ipixuna and Breu Branco are in the category of municipalities with the worst indicators of life quality for the first scenario, and Itupiranga and Novo Repartimento remained in the same category, for the years 2000 and 2010. The municipalities of Jacundá, Itupiranga and Novo Repartimento were categorized with a regular life quality index in 1991. On the contrary, for the scenario 2000 the municipalities of Breu Branco, Goianésia do Pará and Nova Ipixuna were categorized with a regular life quality, and by 2010 the municipality of Jacundá was included in this category.
- The conformation of the groups in this study concludes that even though, according to the law n° 7990/1989, all of these municipalities have received compensation to promote their social and economic development and minimize the impact of the hydropower complex in the area, only one municipality has managed to consistently use these resources to benefit its population.