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ANALYTIC HIERARCHY PROCESS IS BEING USED TO SELECT THE BEST STRATEGIC DIRECTION AND OPTIMAL PORTFOLIO OF PROJECTS TO SUPPORT THE STRATEGY. THIS WILL PAVE THE WAY FOR OUR FUTURE SUCCESS

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Summary: Conflict mitigation and added value increase to the strategic planning process are always goals of companies worldwide. Another distress is the choice of the optimum portfolio of projects which leads to the achievement of the defined targets associated with the strategic planning process. In order to achieve such goals, multi-criteria decision making (MCDM) have been employed supported by the Analytic Hierarchy Process (AHP).

1. Introduction

SISTEMA CATAGUAZES-LEOPOLDINA (SCL) is an electricity distribution and supply company located in Brazil. SCL is comprised of 5 Distribution and Supply Companies (DISCOS), 1 small Generation Company (GENCO) formed by small hydro plants and 1 Energy Services Company (ESCO). The total gross operational revenue of the group in 2006 is US$1.1 billion. With over 4,000 employees, SCL has electrical generation and distribution assets throughout Brazil, serving nearly 7 million people. Figure 1 shows the 5 Distribution and Supply Companies of SISTEMA CATAGUAZES-LEOPOLDINA.

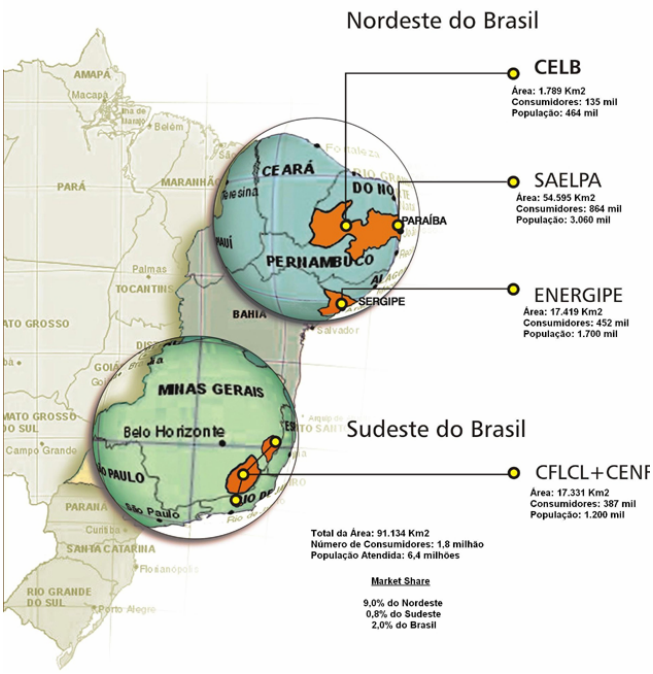


Figure 1. Distribution and Supply Companies of SISTEMA CATAGUAZES-LEOPOLDINA

SCL turned to Analytic Hierarchy Process (AHP) for strategic planning, project evaluation and resource allocation including budgeting. The executive team of SCL took part in the strategic planning process beginning in November of 2006. Using a 2-step approach, they began with a qualitative "strategic analysis", and completed the plan with a quantitative ROI analysis including factors such as Net Present Value.

Having chosen the strategic alternative to be put into practice, SCL evaluated and selected those projects that delivered the most strategic value to the company. In December of 2006, the prioritization of the portfolio of projects was completed with a rigorous evaluation of how each project delivered against strategic and financial criteria.

2. Challenge to Select the Best Strategic Direction and Optimal Portfolio of Projects to Support the Strategy

There were two key challenges faced by SCL. On the one hand, the long-term strategy had to be determined in order to achieve enterprise success and meet shareholder expectations, including targets such as minimum profitability hurdles. On the other hand, the optimum portfolio of projects had to be prioritized according to not only the strategic objectives but also the financial constraints (limited budget) related to each distribution company. These financial constraints were related to regulations as well as contractual covenants associated with the debt of the company.

In order to prioritize the portfolio of projects, SCL developed an internal methodology named Capital Ótimo (Optimum Capital), focused on planning and budgeting. Optimum Capital defines priority indices with specific weights depending on which distribution company is being taken into consideration. The differences among the distribution companies are based on their different characteristics, such as level of customer satisfaction, commercial losses, technical losses, delinquency, continuity levels, etc. Another important characteristic of the evaluation of the project portfolio is that it must balance objectives related to regulatory requirements with commercial interests, infrastructure needs, and service quality demands.

3. Solution

During the Strategic Planning phase, two decision hierarchies were developed. The first one included 7 criteria such as: Ability to Manage Risk Management; Vocation Alignment with SCL; Available Attractive Financial Resources; Strategic Flexibility; Growth Potential; Synergy among Companies; and Capital Market Receptivity.

Table 1. Decision Making Criteria Description

Ability to Manage Risk Management (Habilidade para o Gerenciamento de Riscos)	Empowerment to manage the several inherent risks associated with the strategic alternative adopted. Example: Regulatory Risk Management
Vocation Alignment with SCL (Alinhamento à Vocação do SCL)	Strategic Alternative is concentrated on business with recognized competence of the SCL. Example: Electricity Supply; Small Hydro Power Plants Operation
Available Attractive Financial Resources (Financiabilidade da Alternativa)	The strategic alternative is made viable mainly by means of own capital (low debt). Example: Loans with low interest rates
Strategic Flexibility (Flexibilidade Estratégica)	The alternative allows the adoption of future options which change or enhance the chosen strategies. Examples: Projects Interruption; Share Increase
Growth Potential (Potencial "Upside" – Crescimento)	The alternative makes possible the beginning of a new business with greater growth potential in terms of revenues and profitability. Example: Start up in business with greater growth potential
Synergy among Companies (Potencial "Upside" – Sinergias)	Synergies are likely to be obtained thanks to the employment of the strategic alternative. Example: Scale gains leverage
Capital Market Receptivity (Receptividade pelo Mercado de Capitais)	Capital Market considers the strategic alternative of great value. Examples: Ratings reduction; Best multiples related to the company valuation

The next step after the decision criteria definition was the pairwise comparison among each two criteria, based on the AHP. The main executives of the SCL took part in this stage of the process. An example of criteria weight voting is depicted in Figure 2, where a pairwise comparison can de seen. Figure 3 presents the decision tree with the respective weights associated with the criteria.

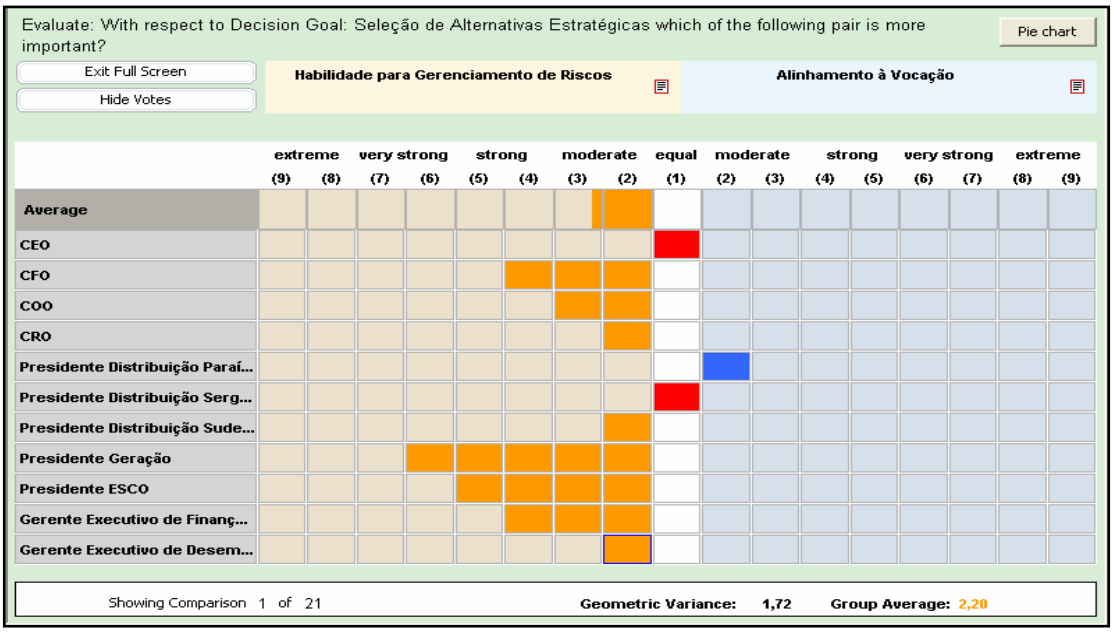


Figure 2. Pairwise Comparison of criteria

Decision Goal: Seleção de Alternativas	
0,1188	Habilidade para Gerenciamento de Riscos
0,0594	Alinhamento à Vocação do SCL
0,2574	Financiabilidade da Alternativa
0,2574	Flexibilidade Estratégica
0,0792	Potencial "Upside" - Crescimento
0,1188	Potencial "Upside" - Sinergias
0,1089	Receptividade pelo Mercado de Capitais

Figure 3. Weighted Tree-View of first hierarchy

Following the definition of the weights of the criteria, it was carried out a new voting comparing the alternatives two by two, in the light of the subjective criteria established. It is worth of mention that the real names of the alternatives have been changed aimed at not disclosing the true strategy (confidentiality purposes). Figure 4 shows an example of the voting of the alternatives comparing their importance two by two and Table 2 presents the final result reached.

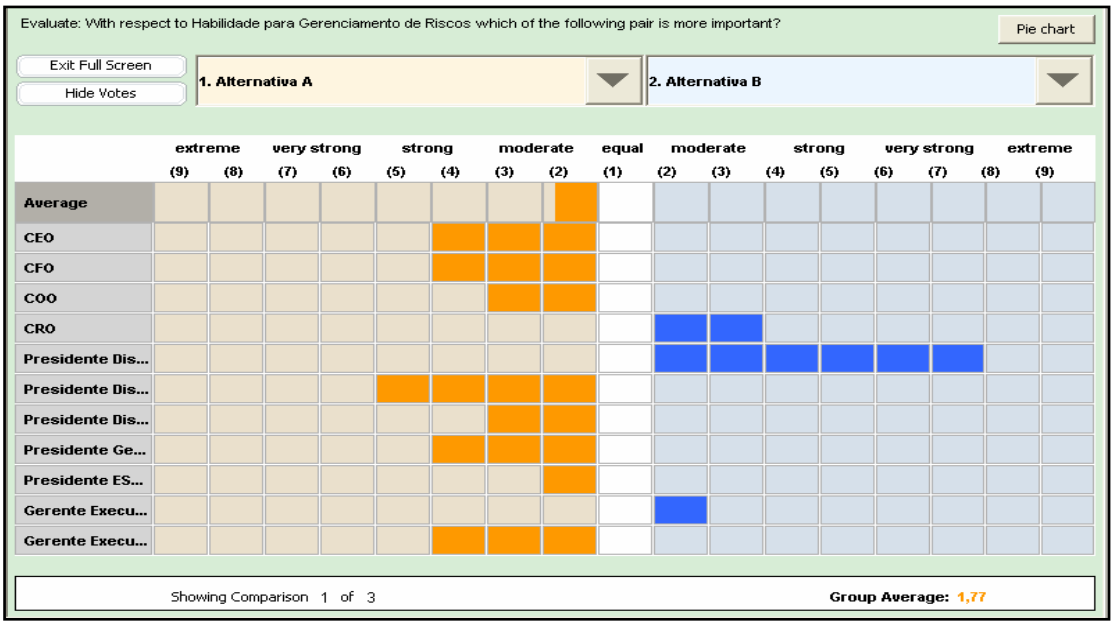


Figure 4. Pairwise Comparison of alternatives of first hierarchy

Table 2. Ratings Scoresheet of first hierarchy

Alternatives	Score	Ability to Manage Risk Management	Vocation Alignment with SCL	Available Attractive Financial Resources	Strategic Flexibility	Growth Potential	Synergy among Companies	Capital Market Receptivity
Alternative a	0,532	0,693	0,431	0,612	0,581	0,218	0,192	0,707
Alternative b	0,252	0,197	0,196	0,29	0,326	0,295	0,153	0,155
Altenative c	0,216	0,111	0,373	0,098	0,093	0,487	0,655	0,138

After evaluating various strategic directions against the first hierarchy, the top strategic alternatives were then evaluated against the second hierarchy. It was comprised of 4 criteria: Net Present Value (VPL); Internal Rate of Return (TIR); Investment required (Investimento), Risk (Risco) and Strategic Adherence (which score derived from the first hierarchic analysis). In relation to the objective criteria, pairwise comparison was not carried out, being utilized the same weights to the whole criteria, as shown in Figure 5.

Figure 5. Weighted Tree-View of second hierarchy

A scale was determined for each criterion, discreet or continuous, aimed at punctuating each alternative. From this point on the scores of each alternative were calculated in order to prioritize them, as can be seen below in Table 3.

Table 3. Ratings Scoresheet of second hierarchy

Alternatives	Score	Net Present Value	Internal Rate of Return	Investment required	Risk	Strategic Adherence
Alternative a	0,710	0,277	0,745	0,921	0,904	0,714
Alternative c	0,470	0,840	0,502	0,561	0,100	0,357
Alternative b	0,460	0,540	0,502	0,619	0,303	0,357

A sensitivity analysis in terms of the impact of the relative importance of each decision criterion to add up to the final score of each alternative was carried out supported by the tool Decision Lens, as well. It is worth mentioning that an on-line variation of the weights may take place aimed at consoliodating the decision. Figure 6 depicts a sensitivity analysis.

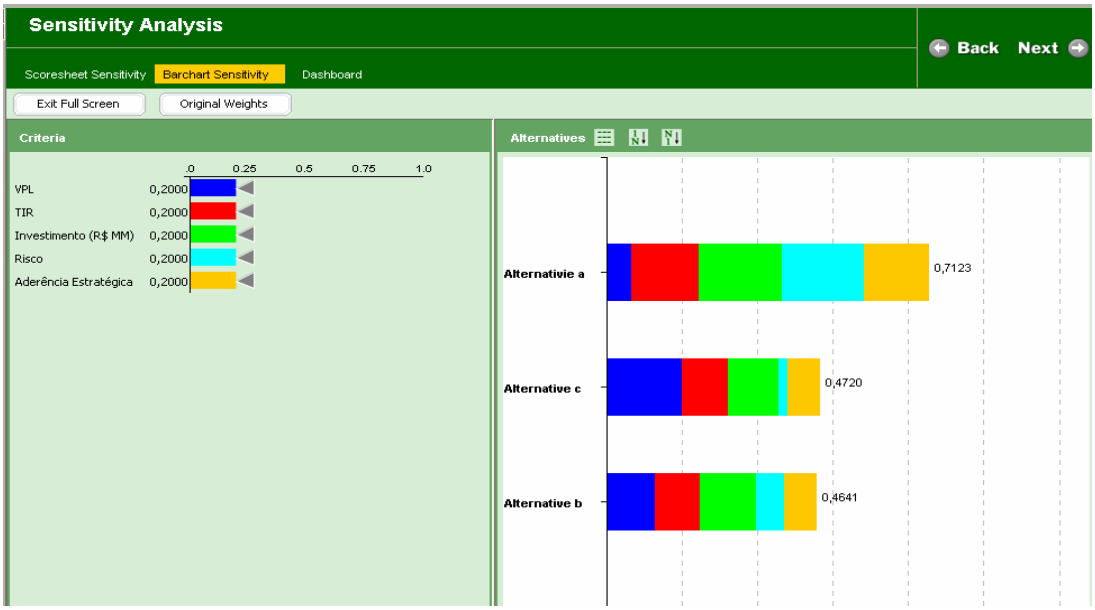


Figure 6. Sensitivity Analysis

At the end, in order to reinforce the decision making, comparison among strategic alternatives are made by means of the construction of bubble charts, which contain three dimensions, as shown in Figure 7. It is worth of mention that the third dimension is the NPV of each alternative bellow, represented by the bubble area. Yet, it must be made clear that any criterion may be allocated in axis x, in axis y or in the third dimension.

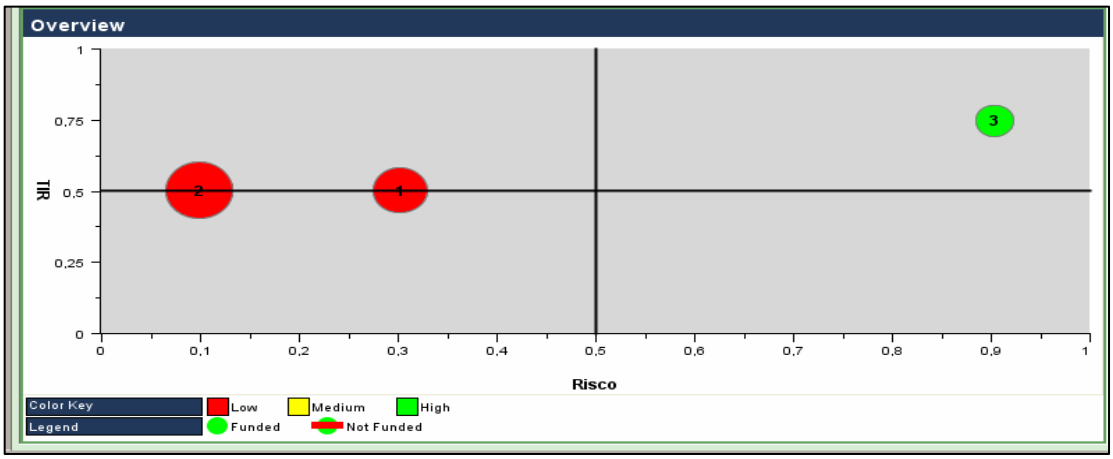


Figure 7. Bubble Charts

Since the best long run strategic alternative for the SCL has been defined, the next step was to prioritize the whole portfolio of projects for each operating company. They were evaluated against criteria from SCL's Optimum Capital methodology including: Safety (IS); Expansion (IE); Service Quality (IV); Product Quality (IQ); Losses (IP); Infra-structure (II); OPEX Reduction (IO); Profitability; New Products (IN); and Compulsory Obligation (IC). In this step, key performance indicators were used to evaluate the impact of each project, and the entire project portfolio was prioritized.

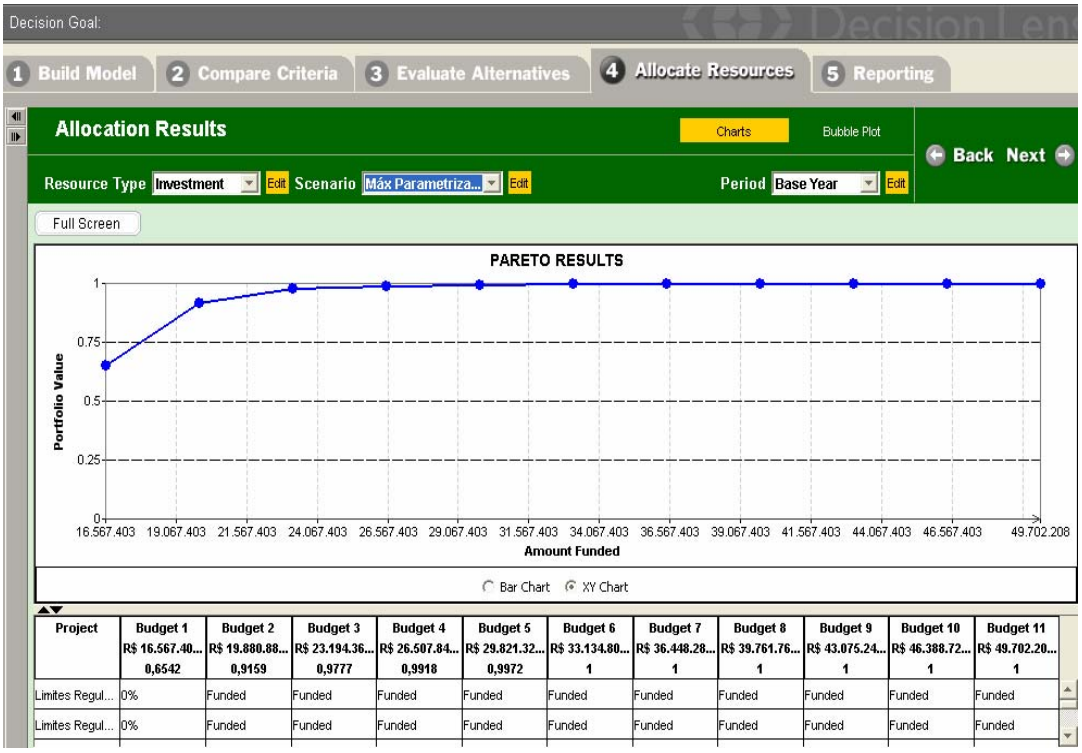
Based on the distinct level of maturity of the Business Units of the SCL, different weights were given to the same criteria utilized to prioritize the portfolio of projects. The definition of such weights is obtained through voting in each Business Unit, based on the pairwise comparison. This process allows the main decision makers of each Business Unit, including the planners, to apply their expertise and sensitivity regarding the Corporate Strategy in the definition of the weight of each criterion, turning the prioritization of the projects more accurate and adherent to the objectives of each Business Unit of the SCL.

The impact of each project of the portfolio on each criterion is measured during the operational planning stage, according to parameters defined in the Capital Ótimo methodology. After carrying out the selection of the data concerned and building continuous scales to each of the criterion, the portfolio of projects prioritization takes place. An example of portfolio of projects is present below in Table 4.

Table 4. Ratings Scoresheet of portfolio of projects

			IC	IE	IP	IQ	IS	IV	IO	II	IN
	Score		,1940	,1650	,0680	,0590	,0620	,0520	,0830	,0650	,0210
1	Limites Regulatórios violados ano 0 RECOND. ALM REA-DOM CORREA	0,1543	0,029	0,035	0,365	0,708	0,124	0,045	0	0	0
2	Limites Regulatórios violados ano 0 ALIM MRE1-002	0,2597	0,057	0,35	0,837	0,954	0,159	0,551	0	0	0
3	Limites Regulatórios violados ano 0 RECOND. ALIM ALEM PARAIBA 1	0,1381	0,004	0,017	0,31	0,923	0,236	0,004	0	0	0
4	SUBST EQUIP SOBRECAREGADOS RECONDUTORAMENTO UBA1-001	0,3116	0,008	0,583	0,964	0,615	0,122	0,684	0	0	0
5	SUBST EQUIP SOBRECAREGADOS RECOND. ALM RODEIRO	0,3553	0,046	0,611	1	0,708	0,131	0,992	0	0	0
6	Atender critério de segurança em SE SEGURANÇA / VIGILÂNCIA REMOTA	0,0176	0	0	0	0,154	0,026	0	0	0,062	0
7	AUTOMAÇÃO DE SE E SIST DE MT E BT EST E OTIMIZAÇÃO S. AUTOMAÇÃO	0,0374	0	0	0	0,154	0	0	0	0,062	0
8	AUTOMAÇÃO DE SE E SIST DE MT E BT AMPLIAÇÃO DO S. DE AUTOMAÇÃO	0,171	0	0	0	0,154	0	0	0	0,062	0
9	AUTOMAÇÃO DE SE E SIST DE MT E BT MANUT. S. AUTOMAÇÃO REC. ELET	0,0933	0	0	0	0,154	0	0	0	0,062	0
10	Rede, instal. e equip deteriorados MELHORIAS SIST. TRANSMISSÃO	0,073	0	0	0	0,154	0,057	0,612	0	0,062	0
11	INV NO SISTEMA DE TELECOM EQUIPAMENTOS TELECOMUNICAÇÕES	0,0536	0	0	0	0,154	0	0	0	0,062	0
12	INV NO SISTEMA DE TELECOM EQUIP. TELEC. ATENDER DISTRIB.	0,0374	0	0	0	0,154	0	0	0	0,062	0
13	AQUISISÃO DE EQUIPAMENTOS RESERVA SUBESTAÇÃO MÓVEL	0,04	0,015	0	0	0,154	0	0	0	0,062	0
14	SUBST EQUIP FIM VIDA ÚTIL REFORMA E TROCA ROTOR NEBLINA	0,052	0	0	0	0	0	1	0	0	0
15	AQUISISÃO DE EQUIPAMENTOS RESERVA EQUIPAMENTOS ELETRICOS	0,0204	0	0	0	0,154	0	0	0	0,062	0
16	SUBST EQUIP FIM VIDA ÚTIL TROCA DO COND. MIGUEL PEREIRA	0,052	0	0	0	0	0	1	0	0	0
17	AUTOMAÇÃO DE SE E SIST DE MT E BT MELHORIA SISTEMA PROTEÇÃO	0,039	0	0	0	0,154	0,026	0	0	0,062	0
18	IMPLEMENTAÇÃO DE NOVOS NEGOCIOS FATURAMENTO ENTRE EMPRESAS	0,021	0	0	0	0	0	0	0	0	1
19	AUTOMAÇÃO DE SE E SIST DE MT E BT UPGRADE PLACAS COMUNICAÇÃO	0,0352	0	0	0	0,154	0	0	0	0,062	0
20	Limites Regulatórios violados ano 0 RECOND. ALM REA - SJM	0,2264	0,004	0,231	0,503	0,815	0,142	0,481	0	0	0
21	INV EM OBRAS CIVIS RPPN USINA MAURÍCIO	0	0	0	0	0	0	0	0	0	0
22	INV EM OBRAS CIVIS RPPN CORONEL DOMICIANO	0	0	0	0	0	0	0	0	0	0
23	Limites Regulatórios violados ano 0 RECOND. ALM SAM-DUA	0,1336	0,003	0,167	0,236	0,892	0,161	0,422	0	0	0
24	Reduzir perdas técnicas na MT/BT RECOND. ALMS VRB-SAG E CBA002	0,2226	0,007	0,517	0,047	0,862	0,169	0,57	0	0	0
25	Limites Regulatórios violados ano 0 RECOND. ALM STM - SDM	0,1881	0,001	0,143	0,56	1	0,192	0,5	0	0	0
26	Limites Regulatórios violados ano 0 INST BANCO RT NO ALM STM - SFX	0,1112	0,006	0,114	0,463	0,769	0,154	0,004	0	0	0
27	Manter níveis de qualidade INST.DE RT ALM ASD1-003(DEB)	0,1498	0,004	0,274	0,118	0,074	0,129	0,42	0	0	0
28	Limites Regulatórios violados ano 0 REFORMA DE CIRCUITOS BT	0,23	0	0,375	0,097	0,585	1	0,73	0	0	0
29	Limites Regulatórios violados ano 0 RECOND E TRIF. ALM TEBA - AGI	0,1481	0,002	0,124	0,324	0,677	0,126	0,446	0	0	0
30	SUBST EQUIP OU ELEMENTOS AVARIADOS SUBST TRAFOS AVARIADOS	0,1162	0,05	0	0	0,154	0,026	0	0	0	0
31	SUBST EQUIP OU ELEMENTOS AVARIADOS SUBSTITUIÇÃO DE PÁRA-RAIOS	0,0646	0,05	0	0	0,154	0,026	0	0	0	0
32	Manter níveis de continuidade MANUTENÇÃO DE ALM'S E LD'S	0,1026	0,05	0	0	0,538	0,09	0,454	0	0	0
33	Manter níveis de continuidade AQUISIÇÃO EQUIP LINHA VIVA	0,1086	0	0	0	0,538	0,09	0	0	0	0
34	Manter níveis de continuidade TRIFAS. ALM TOCANTINS - 001	0,2389	0,012	0,307	0,68	0,646	0,114	0,402	0	0	0
35	INV EM MÓVEIS E UTENSÍLIOS AQUISIÇÃO DE FERRAMENTAL	0,0056	0	0	0	0	0,026	0	0	0,062	0
36	INV EM MÓVEIS E UTENSÍLIOS AQUISIÇÃO DE MÓVEIS E UTENS.	0,004	0	0	0	0	0	0	0	0,062	0
37	Dist mínima e/ou cabo partido na BT OBRAS DE SEGURANÇA EM BT	0,0373	0	0	0	0,538	0,09	0	0	0	0
38	Segurança de pessoas AQUISIÇÃO EQUIP DE SEGURANÇA	0,0267	0	0	0	0,154	0,026	0,308	0	0	0
39	Manter níveis de continuidade CONST. REDE PROTEGIDA - DESC-L	0,0429	0,01	0	0	0,154	0	0	0	0	0
40	Manter níveis de continuidade INST DE CHAVE REMOTA-DESC-L	0,0361	0	0	0	0,154	0	0	0	0	0
41	Manter níveis de continuidade ESTUDOS DE PROTEÇÃO	0,0597	0,05	0	0	0,154	0,026	0	0	0	0
42	Manter níveis de continuidade AQUIS DE SENSORES DE CURTO	0,019	0	0	0	0,154	0,026	0	0	0	0
43	Reduzir perdas técnicas na MT/BT TRIFAS. TRECHO ALM RIP1-004	0,3099	0,006	0,175	0,979	0,8	0,14	0,379	0	0	0
44	EQUIP MEDIÇÃO DE TENSÃO E ENERGIA EQUIP MEDIÇÃO AMOSTRAL-ANEEL	0,0333	0,125	0	0	0,154	0	0	0	0	0
45	PACDEE E P&D PROJ DE EFICIÊNCIA ENERGÉTICA	0,194	1	0	0	0	0	0	0	0	0
46	PACDEE E P&D PROJETOS DE P&D	0,097	0,5	0	0	0	0	0	0	0	0
47	Manut/atual SGD e CALL CENTER EQUIPAMENTOS PARA COD	0,0192	0,097	0	0	0	0	0	0	0,006	0
48	AQUISISÃO DE EQUIPAMENTOS RESERVA EQUIP PARA LABORATORIO BT	0,032	0	0	0	0,543	0	0	0	0	0
49	Segurança de pessoas NOVAS FERRAMENTAS P/ EQUIPES	0,0385	0	0	0	0,308	0,051	0	0	0	0
50	Manut/atual SGD e CALL CENTER EQUIP PARA CENTRAL SOLUÇÕES	0,0192	0,097	0	0	0	0	0	0	0,006	0
51	Vegetativo URB c/ MT VEGETATIVO - COM EXTENSÃO REDE	0,0665	0,05	0,165	0	0	0	0	0	0	0
52	Vegetativo URB s/ MT VEGETATIVO - SOMENTE RAMAL	0,4057	0,05	1	0	0	0	0	0	0	0
53	Vegetativo universalizado rural VEGETATIVO - RURAL	0,0269	0,05	0,03	0	0	0	0	0	0	0
54	INV EM MÓVEIS E UTENSÍLIOS AQUISIÇÃO DE MÓVEIS - DEFA	0,0004	0	0	0	0	0	0	0	0,006	0
55	MEDIDOR E EQUIP DE MEDIÇÃO - GA MEDIDORES DEME - SUBSTITUIÇÃO	0,1719	0,05	0	0	0	0	0	0	0	0
56	INV EM INSOURCING/OUTSOURCING PROJETO SIGOD-ANTIGO MITSUCON	0,0322	0	0	0	0	0	0	0,003	0	0
57	INV EM MÓVEIS E UTENSÍLIOS APARELHOS AR CONDICIONADO	0,0344	0	0	0	0	0	0	0	0	0
58	Limites Regulatórios violados ano 0 REFRIGERAÇÃO MUSEU TECNOLÓGICO	0,0111	0,01	0	0	0	0	0,176	0	0	0
59	INV EM OBRAS CIVIS PRÉDIO DO ESCRITÓRIO CENTRAL	0,0389	0	0	0	0	0	0	0	0,372	0
60	INV EM OBRAS CIVIS AGENCIAS, OFICINAS E PRED OPER	0,0339	0	0	0	0	0,026	0	0	0,496	0
61	Renovação da frota de veículos DESG SUBST F1000	0,0215	0	0	0	0	0	0	0,003	0,062	0
62	Limites Regulatórios violados ano 0 INST. PREV. COMBATE INCENDIO	0,0036	0,01	0	0	0	0,026	0	0	0	0
63	Renovação da frota de veículos SUBST VEICULOS STRADA	0,027	0	0	0	0	0	0	0	0	0
64	Renovação da frota de veículos SUBST MOTOS	0,0101	0	0	0	0	0	0	0,003	0	0
65	Renovação da frota de veículos DESG -UNO SUBST/PALIO	0,0264	0	0	0	0	0	0	0,003	0,062	0
66	Segurança patrimonial DESG / MANHU ALARMES	0,004	0	0	0	0	0	0	0	0,062	0
67	Limites Regulatórios violados ano 0 AQUIS MED. CAMPANHA MEDIÇÃO	0,0097	0,05	0	0	0	0	0	0	0	0
68	Manter níveis de continuidade CONST REDE PROTEGIDA - DESC-O	0,0388	0,014	0	0	0,154	0	0	0	0	0
69	Manter níveis de continuidade INST DE CHAVE REMOTA - DESC-O	0,0529	0,011	0	0	0,154	0	0	0	0	0
70	Segurança de pessoas DESVIO DE LT TCT-UTE2 138KV	0,0027	0,006	0	0	0	0,026	0	0	0	0
71	Manter níveis de continuidade CONSTR. LOOP DE SANTANA MAU	0,0133	0	0	0	0,154	0,004	0	0	0,062	0
72	INV NO SISTEMA DE TELECOM EQUIP PARA TELECOMUNICAÇÃO	0,0131	0	0	0	0,154	0	0	0	0,062	0
73	Manter níveis de continuidade LT SAMARCO-CEMIG(AQUISIÇÃO)	0,0121	0,016	0	0	0,154	0	0	0	0	0
74	Perdas não-técnicas: medidores e ramais EQUIPES DE INSPEÇÃO GRUPO B	0,1373	0	0	0	0	0	0	0	0	0
75	INV EM INSOURCING/OUTSOURCING EQUIP. CONSTRUÇÃO DE LT	0,0166	0	0	0	0,271	0	0	0,003	0,006	0
76	Segurança de pessoas MICRO DE BORDO - D	0,0277	0	0	0	0	0,026	0	0	0,062	0
77	INV EM INFORMÁTICA NEC USUARIOS AMPLIAÇÃO - D	0,0221	0	0	0	0,154	0,026	0	0	0,062	0
78	Segurança de pessoas DESG - MICRO DE BORDO - S	0,1291	0	0	0	0	0	0	1	0,006	0
79	Atualiz parque de informática NEC USUARIOS SUBSTITUICAO - D	0,0368	0	0	0	0,308	0,051	0	0	0,124	0
80	Renovação da frota de veículos SUBST VEIC DEOC / DEAE	0,0523	0	0	0	0	0	0	0	0	0
81	Renovação da frota de veículos SUBST DEME / SMLT	0,0327	0	0	0	0	0	0	0	0	0
82	Renovação da frota de veículos SUBST DVMM / DVME	0,0458	0	0	0	0	0	0	0	0	0
83	INV EM INFORMÁTICA NEC USUARIOS AQUISIÇÃO - S	0,036	0	0	0	0,271	0	0	0	0,006	0
84	Atualiz parque de informática NEC USUARIOS SUBSTITUIÇÃO - S	0,0517	0	0	0	0,543	0	0	0	0,001	0
85	Segurança de pessoas DESG - MICRO DE BORDO - H	0,1037	0	0	0	0	0,039	0	0	0,333	0
86	Renovação da frota de veículos SUBST VEIC DESG MAREA / GOL	0,1062	0	0	0	0	0	0	0	0	0
87	EQUIP MEDIÇÃO DE TENSÃO E ENERGIA AQUIS EQUIP MEDIÇÃO MT - DVEN	0,0171	0,006	0	0	0,271	0	0	0	0	0
88	INV EM INFORMÁTICA NEC USUARIOS AMPLIAÇÃO - H	0,0735	0	0	0	0,163	0,039	0	0	0,333	0
89	Limites Regulatórios violados ano 0 ADIÇÃO ATIVO REDE PARTICULAR	0,0097	0,05	0	0	0	0	0	0	0	0
90	Atualiz parque de informática NEC USUARIOS SUBSTITUICAO - H	0,1073	0	0	0	0,326	0,079	0	0	0,667	0
91	Atualiz parque de informática ATUALIZAÇAO DOS ATIVOS DE REDE	0,141	0	0	0	0,488	0,118	0	0	1	0
92	AMPLIAÇÃO DA FROTA DE VEÍCULOS NR10 - MOTOS	0,004	0	0	0	0	0	0	0	0,062	0
93	INV EM INFORMÁTICA PLANO DE CONTINGENCIA	0,141	0	0	0	0,488	0,118	0	0	1	0
94	INV EM INFORMÁTICA NOVA SOLUC VIDEOCONFERENCIA	0,0074	0	0	0	0	0	0	0	0	0
95	Atualiz parque de informática UPGRADE DE HARDWARE	0,0221	0	0	0	0,154	0,026	0	0	0,062	0
96	INV EM INFORMÁTICA SW GST DE CORREIO ELETRONICO	0,1073	0	0	0	0,326	0,079	0	0	0,667	0
97	INV EM INFORMÁTICA SW GST DE ATIVOS E SERVIÇOS	0,141	0	0	0	0,488	0,118	0	0	1	0
98	INV EM INFORMÁTICA PDI	0,0398	0	0	0	0	0	0	0	0	0
99	Atualiz parque de informática ATUALIZAÇÃO DE SOFTWARES	0,0398	0	0	0	0	0	0	0	0	0
100	Manut/atual SGD e CALL CENTER LICENSA SOFTWARE SISPAI	0,004	0	0	0	0	0	0	0	0,062	0
101	AMPLIAÇÃO DA FROTA DE VEÍCULOS MOTOS P/ REDUZIR INADIMPLENCIA	0,1769	0	0	0	0	0	0	0	0	0
102	IMPLEMENTAÇÃO DE NOVOS NEGOCIOS OFICINA MÓVEL E EQUIP P/ USINA	0,021	0	0	0	0	0	0	0	0	1
103	Rede, instal. e equip deteriorados MELHORIA MEDIÇÃO OPERACIONAL	0,0091	0	0	0	0,154	0	0	0	0	0
104	INV EQUIP DE SEGUR OPERACIONAL ILUMINAÇÃO DE SUBESTAÇÕES	0,0147	0	0	0	0,154	0,026	0	0	0,062	0
105	Renovação da frota de veículos LEASING - VEÍCULOS	0	0	0	0	0	0	0	0	0	0
106	AMPLIAÇÃO DA FROTA DE VEÍCULOS AQUISIÇÃO DE 1 AVIÃO	0,0217	0	0	0	0	0	0	0	0,333	0
107	INV EM MÓVEIS E UTENSÍLIOS AQUIS MOVEIS ESCRITORIO RIO	0,0217	0	0	0	0	0	0	0	0,333	0
108	Segurança patrimonial INSTALAÇÃO DE CATRACAS	0,0024	0	0	0	0	0,039	0	0	0	0
109	Segurança de pessoas PAINEL DE HELICÓPTERO	0,0024	0	0	0	0	0,039	0	0	0	0

The final step was to apply the project portfolio to budget constraints and decide on the optimal investment mix across the project set. Following this, it can be obtained the optimum portfolio of projects associated with the financial resources available. Furthermore, several portfolios of projects optimized can be defined for different levels of resources, as shown in Figure 8.



Project	Budget 1 R$ 16.567.40... 0,6542	Budget 2 R$ 19.880.88... 0,9159	Budget 3 R$ 23.194.36... 0,9777	Budget 4 R$ 26.507.84... 0,9918	Budget 5 R$ 29.821.32... 0,9972	Budget 6 R$ 33.134.80... 1	Budget 7 R$ 36.448.28... 1	Budget 8 R$ 39.761.76... 1	Budget 9 R$ 43.075.24... 1	Budget 10 R$ 46.388.72... 1	Budget 11 R$ 49.702.20... 1
Limites Regul...	0%	Funded	Funded	Funded	Funded	Funded	Funded	Funded	Funded	Funded	Funded
Limites Regul...	0%	Funded	Funded	Funded	Funded	Funded	Funded	Funded	Funded	Funded	Funded

Figure 8. Allocation Results

Since the optimized portfolio of projects of the companies is determined, a financial evaluation is carried out, comprising the measurement of the predicted outcomes to the period considered. Such outcomes are analyzed vis-à-vis their alignment to the strategic drivers defined in the Strategic Planning. If necessary, adjustments are carried out in the companies' portfolios of projects. Finally, the business plan containing such portfolios is submitted to approval of the Board.

4. Conclusion

Thanks to Analytic Hierarchy Process, SCL was able to optimize its portfolio of projects in order to achieve its strategic goals. Within the next 3 years, over 140 projects will be executed based in this prioritization, and the team has the confidence that these are the best projects for all of the companies in the group. The total cost associated with the projects is US$270MM. The benefits are expected to be many multiples of this, maximized in terms of reaching both the strategic and financial goals of the company.

The Analytic Hierarchy Process had an additional beneficial side effect -- it created a conscious, consensus-oriented decision making process that improved the buy-in of the team in terms of both the strategic alternatives and the final portfolio of projects.

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