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The diversity of the national industry and the significant availability of natural resources reveal excellent opportunities for the sustainable development of Brazil, combining economic growth, social inclusion and environmental conservation. The materialization of concerns related to sustainability in the strategic agenda of enterprises and governments is a reality. Apart from isolated cases of success, the consequences of this attitude are felt in entire sectors of the economy. Further advances are still needed, but the path has already been identified and going back is impossible.

After coordinating an unprecedented critical thinking process on sustainability with 16 industry associations and the Industry System’s organizations, the National Industry Confederation (CNI) delivers to the Brazilian society a wide range of information on progress, challenges and opportunities yet to come. The results presented here may not portray the significance of the discussion process experienced by the industry in preparing these documents. Developments on the process will be beyond the Rio +20 Conference, and are definitely incorporated on the daily lives of companies.

The subject of sustainability is inserted differently in each of the industrial sectors. However, some elements are common to all. The continuous pursuit for efficiency in use of resources and the need to increase industrial competitiveness are on the agenda of all the sectors. Encouraging innovation and scientific and technological development is strategic on the transition to more sustainable patterns of production.

Strategies to intensify actions coordinated internally in the industrial sectors and with governments and civil society organizations are no less important. The dissemination of sustainable practices by means of the supply chain and incentives for companies to undertake the role of integrated management of the territories are powerful tools.

The sectorial volumes developed by industry associations and by the Industry System’s organizations are valuable contributions to addressing subjects such as sustainability and competitiveness of domestic industry. One of the most representative results of this process will certainly be the strengthening of structured programs of
action with a focus on promoting sustainability in the production. These initiatives will act as raw materials so that the industries involved and the Industry System are able to systematically publish documents presenting the national industry’s developments towards the goals of sustainable production.

The documents presented here are intended to be a valuable contribution to enhance the debate on sustainability. Each of the sectorial associations and the organizations that are part of the Industry System is congratulated for their efforts.

Robson Braga de Andrade
President of the National Confederation of Industry – Brazil
Sustainability has become a pivotal factor in ensuring the competitiveness of organizations and is now a strategic issue on the business agenda. In light of this, Brazilian industries are more aware of the need and of the strategic importance of adopting management practices that bolster the social and environmental responsibility of its productive processes.

In this context, business leaders have a vitally important role in the dissemination and in the adoption of processes based on economic, social and environmental pillars, which are at the core of sustainable development. IEL has therefore been rethinking its activities and widening its scope in order to focus its efforts on industry training to improve management. Over the course of four decades, it has been offering training to managers on topics such as innovation and new business practices required by a globalized market.

In accordance to the guidelines contained in the Agenda 21, drafted during Eco-92 and reiterated during the Rio+10 in Johannesburg, the present document, IEL and sustainable development, describes how the Institute has contributed to the sustainable development of the industry, as well as giving an account of the challenges and opportunities IEL has addressed on the path to sustainability.

Carlos Cavalcante
Superintendent of the National IEL
Over the course of four decades, the Euvaldo Lodi Institute (IEL) has been working to increase the competitiveness of Brazilian industry. Whether by offering training to personnel or business seminars to industry leaders and also by supporting innovation, IEL tirelessly seeks new ways to meet the needs expressed by the industrial sector and, as a result, to take part in the development process of the country.

The activities IEL and its partner regional units develop are directed by its mission statement, which is to be a national reference for the improvement of management, for training of business leaders and for the interaction between businesses and think tanks and other academic centers. Designed to follow a decentralized management model, during its first year of operation, IEL organized a network of Regional Centers in 17 states. This model grants autonomy to the regional units, which must comply with the general guidelines while heeding regional specificities. This system approach is the result of an institutional consolidation that began in 2003 with the purpose of transforming the Regional Unit network into a well established system with a presence in all 26 states plus Federal District, with the National IEL at the helm.

IEL was created in 1969 by CNI, Federations, SESI and Senai in an effort to expand the services available to the productive sector and complement the actions of its founding counterparts. The principal commitment of CNI, Federations, SESI and Senai has always been to provide a competitive edge to Brazilian industry. To this end, CNI has taken on the responsibility of advocating for the productive sector. Senai, in turn, has focused on training labor on technical and technological aspects and SESI was tasked with improving the workplace and health of the workers, as well of the quality of life of the workers and their families.

Nevertheless, a need was still felt to create an entity devoted to the training of the business leaders, to conducting research, seminars, surveys and internship programs. In order to implement this agenda, the gap between industry and university would need to be breached.
Indeed, this gap was felt both by the productive sector and in the halls of academe. Universities created specific channels to grow closer to the industry while the industry also made a corresponding effort by creating the Euvaldo Lodi Institute (IEL). Once this new entity was created, CNI was equipped to handle the training of its professionals in the new skills required by both the industry and by the marketplace. There was a rising demand for personnel trained to think about the inner workings of the business and capable of performing management duties that neither the conventional businessman nor the factory worker was prepared to meet.

During its first ten years of existence, IEL kept a focus on its original mission of promoting industry-university integration by offering internship opportunities, specific courses for recent graduates and work placement for university graduates. In the early 1990s, however, it was pushed to expand its scope of action in order to meet new industry demands arising from the opening of the domestic market, in which competitiveness hinged on quality. During this time, the institute underwent strategic realignment, in which the emphasis shifted to the new technologies and support of small and medium enterprises, in addition to training the human resources to manage processes and quality.

IEL’s agenda has been fine tuned over the course of the last ten years. IEL included the concept of innovation management and its dissemination in businesses onto the top of its list of strategic priorities. The production chain was strengthened by providing training programs for vendors and IEL partnered with some of the best business schools in the world to offer executive skill building. With 97 branches throughout Brazil, IEL is in a position to expand the reach of its actions and fulfill its mission to improve management and business training in all regions of the country by offering tools for the complete and sustainable development of Brazilian industry, namely, tools to boost innovation, efficiency in management and the tools necessary for leaders to make informed decisions within the new world economic order.

1.1 Scope

Modern society views knowledge as being at the base of a dynamic industrial sector and as the main input needed to propel the development of a country. This view is the rationale behind the internship program offered by IEL over the last 43 years to foster the development of personnel and the exchange of knowledge by placing a premium on the talent and commitment of the youth who will become the business leaders of tomorrow.

A little over 20 years after its creation, when the country needed to address its technological gap, IEL took on the challenge of widening its scope in order to also support the modernization of business and prepare companies and their leaders for a new business management model. Competition on a global scale imposes increasingly complex challenges to countries and to organizations. In order to remain competitive, countries require that its businesses also stay competitive, which can only occur if they are constantly striving to improve their own processes, products, market presence and their business. Competitive organizations, in turn, require leaders attuned to the latest in management practices.
As a result of this, IEL took on a new role in the mid-2000s: training managers for innovation and for the new business practices of a globalized market that demands that its productive processes be sustainable and respectful of the environment. Therefore, in the realm of business leader training, IEL offers a program for executive education, which consists in the training of Brazilian business leaders and executives according to the most advanced business management tenets and practices. In order to accomplish this goal, IEL has established partnerships with top business schools in the country and the world and offers courses in Brazil and abroad on topics tailored to the reality of Brazilian businesses and market.

In addition to the aforementioned mode of training, IEL also offers programs to support single businesses or companies involved in local productive arrangements or productive chains in their efforts to maintain their competitive edge. Among the initiatives developed to target these challenges, it is worth mentioning the IEL Program of Vendor Development and Qualification (PQF), which strengthens the productive chain and generates efficiency and productivity gains by integrating large and medium companies and their vendors.

Training and consulting in innovation management as well as advising businesses in how to attract funds for project development also comprise the strategic agenda of IEL to support the Brazilian industry in the development of innovative products and processes.

1.2 Purpose of handbook

Brazilian companies are becoming more aware of the need and of the strategic importance of adopting sustainable development practices that enhance the social and environmental responsibility of its productive processes. Discussions taking place around the world on environmental issues have pressured businesses to consider the impact of its operations on the environment and the effect of its actions on the social and economic development of society and to commit to addressing the problems raised.

The international debate on environmental and sustainable development issues, whose origin can be traced back to the two major Earth Summits promoted by the United Nations (UN), Eco-92 and Rio+10, has been the driving force behind the greater awareness surrounding the environmental issues and sustainable development. As an entity that comprises the system that represents national industry, IEL is in support of the goals of the Rio+20 Conference, which are to ensure renewed political support for sustainable development, to evaluate the progress made thus far and to identify the gaps that still remain for the full implementation of the resolutions of the main meetings on sustainable development, in addition to discussing emerging challenges1.

This book intends to present the activities which, over the course of the past few decades, IEL has promoted with the intention of contributing to the sustainable development of the productive sector. It also presents the challenges and opportunities for IEL on the path towards sustainability.

1 Source: http://www.rio20.info/2012/.
Sustainability is being considered an important aspect in the competitiveness of organizations and is fast becoming the guiding principle of the business sector. The concept of eco-efficiency has evolved into more than a concern with using fewer resources and creating less waste and pollution and is now seen as an instrument that promotes innovation and competitiveness throughout the industrial sector.

In addition to providing financial advantages, sustainability calls for businesses to be managed in accordance to the principles of corporate governance, namely, ethics, transparency, equity, rendering of accounts and compliance with legal provisions. It also includes the social measures adopted and the manner in which the businesses conduct themselves, their impact on and their relationship with the environment and all relevant stakeholders.

The idea of sustainability, which was borne from the concern of environmentalists that economic activity should meet the needs of the present without compromising the needs of future generations, according to the Brundtland Report\(^2\), published by the UN in 1987, took hold when science was able to unequivocally prove the negative effects of global warming. Sustainability thus became an integral part of the social responsibility of companies. It has become synonymous to continuity and is shaping the future plans of companies, whose leaders have an important role in the promotion of sustainable development of businesses.

\(^2\) The UN, by means of the World Commission on Environment and Development, released the report Our Common Future in 1987 in which it defined the concept of sustainable development. The document became known as the Brundtland Report, named in honor of the Chairman of the Commission, Gro Harlem Brundtland, the former Prime Minister of Norway and advocate of sustainability.
2.1 Internship and higher education

The internship program began in 1969 and was the first project undertaken by IEL. Its goal was to place young men and women in the workplace and thus promote social inclusion, provide opportunities and generate jobs. Additionally, the internship program has proven to be an alternative to work placement programs, which helps new graduates find their first jobs, by offering advantages to companies and to future employees alike. For example, the internship program directly influenced the higher education system as schools tailored their curricula to the needs of the productive sector, which required people prepared to work in a rapidly developing and growing country. IEL has helped over 1.5 million students, from 10 thousand universities, to find positions in roughly 40 thousand companies all over Brazil. Despite being active in many realms, IEL has always made it a priority to strengthen the interaction between industry and university. As a result of the experience it has gained, IEL was invited by the Ministry of Education to take part in the debate about Higher Education Reform and the new Internship Law.

On the issue of the reform of higher education, IEL was tasked with organizing the conclusions resulting from this broad debate, which began in 2004, within the productive sector. The discussions took place throughout five workshops and three regional meetings that brought together more than two hundred businessmen, industry representatives, deans of universities and heads of development agencies, as well as politicians. The culmination of this process was a report entitled “Industry’s contribution to the reform of higher education” in 2005.

The proposal outlined six major challenges: to institute a new regulatory framework to evaluate the performance of the higher education institutions (IES); to implement a process for autonomy of the universities; to develop basic and applied research whose social and economic relevance are aligned with the “national project”; to improve the accreditation and evaluation criteria used by the system of higher education; to establish educational standards compatible with the information and knowledge society; to expand the openings in technology-related areas in higher education.

The document underscored the need to establish a close relationship between knowledge, education and development. In addition, as a result of the recognized need for higher education to conform to regional realities, the document supported that “the requirement for universities to offer learning, research and outreach be made more flexible so that they could choose their focus depending on their particular vocation, resources and regional needs.” The document also emphasized that the “course syllabi take into consideration the demands of a knowledge society and the dissemination of an enterprising culture in all of the educational levels” (CNI, 2004, pgs. 26 and 35).

In regard to the Internship Law, IEL was an active participant throughout the process of creating the new law, from following the projects that were the basis of the document approved in 2008, to the analysis of all of the discussion topics and the suggestions for improvement submitted to legislators. This work resulted in the publication of a brochure entitled “Internship Law – all you need to know,” which covers the relevant issues of the new legislation for businesses.
2.2 Undergraduate science and technology program

Another program designed to prepare students to enter the workforce is the Undergraduate Science and Technology Program for Small and Medium Enterprises (Bitec), created by IEL with the support of Senai, Sebrae and CNPq in 1995. This program intends to transfer knowledge from the universities to the industry, with a direct application to the productive sector. With a focus on micro and small enterprises, Bitec encourages the participation of academically qualified students interested in contributing to the technological improvement of industry; the engagement of interested professors and researchers and the development of projects that will aid industry in increasing quality and productivity. Over the course of nice editions, 4,209 scholarships have been granted in the areas of agribusiness, information technology, environmental management, biotechnology, food and health. The industrial sector received 43% of the approved projects, the service industry received 19%; commercial establishments, 14%; and agribusiness, 9%. A few of the projects with a social and environmental emphasis will be described in greater detail in item 3.8.1.

2.3 Technological dissemination

In 1991, the government created the Program for the Support of Competitiveness and Technological Dissemination (PCDT) within the Ministry of Science and Technology (MCT). The goal of this program was to support incubator companies and technological parks and thus enhance the national capacity to master production technologies. During that same year, IEL instituted the National Plan for Industry-University Interaction which was an initiative that underscored the importance of supporting projects focused on the technological development of industry while heeding regional specificities. As of 1991, the Program for Production Workshops (POP), designed to bolster technology promoting projects, started to support the industry-university connection sponsored by the Regional Units.

This initiative caught the attention of several productive sectors – the construction industry, garment industry, metal-mechanics and electric components industries, among others – and many federal universities. The priorities for the industry and the unions were: productivity and quality; recycling of raw materials; quality control; human resources; rational energy use; standardization and material management; prevention of work-related accidents and systems for information management, all topics that already included a social and environmental responsibility aspect. The Program for Education for Quality (PEQ) was created in 1992 by means the Protocol for Institutional Actions in which IEL established a partnership with forty public and private higher education institutions. At the same time, Rio de Janeiro was hosting the UN Conference on the Environment and Development, Eco-92, which paved the way for a discussion on a series of topics directly and indirectly related to industrial production.
2.4 Entrepreneurship and business training

IEL has adopted a two-pronged approach in regard to entrepreneurship: it focuses on the promotion of an entrepreneurial culture and also on business training. The business training courses offered by the Institute, which play a strategic role in fostering industrial competitiveness and sustainable development in Brazil, have been vital in the efforts to counter the main causes of business failure, such as the lack of information on business management and strategic information for decision-making.

As part of these efforts, the Strategic Industry Map 2007-2015 was introduced in 2005. The Map was developed with sustainable development as the underlying value influencing the business outlook and also the objectives, goals and programs promoting sustainable growth and job generation in order to transform Brazil into a competitive economy. To this end, the document determined that IEL should focus its efforts in training business leaders. In addition to this, the Map outlined ways in which it could contribute to innovation and to the social and environmental responsibility of industries, thus helping achieve the industry vision of sustainable development, ie, the association of economic growth and environmental aspects.

The capacity to stimulate their staff and deliver outcomes is increasingly becoming a required attribute of business leaders. Businessmen are agents of development and harbingers of change. IEL is aware of this and offers programs for leadership development tailored to the needs of each business.
After Brazil became an open economy in the 90s, Brazilian businesses began to invest heavily in the development of its professionals. In 1998, a survey conducted by IEL among the Industry Federations in every state identified the need for a concerted effort in business training. The market was clearly in need of readily available learning and qualification opportunities. The businessmen wanted to become better equipped to deal with the expansion of economic blocs, technological alliances and with the overhaul of strategic structures.

To meet this demand, IEL began to offer courses for business leaders in 1998. The first program of this kind was the Training of New Businessmen and Leaders for Micro and Small Industrial Enterprises which was held between 1998 and 2000 with the participation of Sebrae and several universities. During this time period, 23 diploma courses were offered to 660 businessmen in 16 states. Between the years of 2002 and 2003, a new edition of this program was offered to 700 students in 24 states.

In 2004, IEL and Sebrae signed an agreement to offer an updated version of the program. The Project for Training Businessmen for Micro and Small Enterprises was instituted in all 26 states, in addition to the Federal District, with the purpose of enhancing the participants’ abilities in business management, innovation management, finance, marketing, logistics, cost administration, legislation and leadership, among other areas, and to provide businesses with the competitive advantage needed to deal with the constant changes to the productive processes. Throughout the Program, over 3,500 managers, executives and businessmen received the training.

The courses are developed according to known regional demands expressed by business representatives, productive sectors, local productive chains and arrangements (APLs). The total credit hour load of the trainings varies between 90 and 270. All courses over 90 credit hours are offered with partner higher education institutions that add value to the business strategy. It is therefore an important instrument to ensure high survival rates for micro and small enterprises.

Another of IEL’s efforts focused on the development of leaders are the international editions of the Program for Executive Education offered in partnership with renowned business schools in the world – the Institute for Management Development (IMD), in Switzerland; Insead, in France; and Wharton School of the University of Philadelphia. In over a decade, 1,093 executives received training. One of the sessions of the 11th edition of the course “Strategic Management for Business Leaders,” held with Insead in 2010, discussed strategies for sustainability and businessmen learned how to optimize their ecoinvestments by analyzing the business logic behind the development and evaluation of sustainability strategies.

### 2.5 Vendor training

In addition to the training offered to businessmen, IEL also conducts programs to help industries maintain their competitive edge, whether they are individual companies or part of a local productive arrangement or production chain. Among the initiatives that fall under this heading, the Program for Vendor Training (PQF), launched in Brazil in 2007, is worth mentioning.
The Program bolsters the competitiveness and productivity of the industry as a whole by strengthening the production chains and contributing towards environmental conservation and regional development. The businesses receive certification in areas of management required by the large and medium purchasing companies that take part in the Program, such as: quality; environment; occupational health and safety; social responsibility of businesses; innovation; production and macro management – strategic, commercial and financial management.

The Program’s objective of increasing efficiency levels and strengthening business management by helping companies obtain international certification (ISO 9001; ISO 14001; OHSAS 18.001) is perfectly aligned with the demands presented by a competitive market. The Program is currently underway in the states of Espírito Santo, Goiás and Mato Grosso do Sul, having expanded to Sergipe and Tocantins in 2012. This service is provided via training and on site consulting.

The PQF has been implemented in 17 Regional Units: Maranhão, Pará, Goiás, Bahia, Rondônia, Acre, Amazonas, Minas Gerais, Mato Grosso do Sul, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina, Sergipe, Tocantins, Ceará, Espírito Santo and Pernambuco. A total of 1,006 businesses are participating, of which 103 are anchor-companies and 903 are vendors.

Figure 2, shown below, illustrates the value chain, the internal and external links and how the Program works to enhance these links, resulting in an overall competitive gain.

![Value Chain Diagram](source: SEBRAE (adapted))
Table 1, below, lists the 103 participating anchor-companies of the IEL Program for Vendor Development and Training, organized by Regional Unit.

<table>
<thead>
<tr>
<th>RU</th>
<th>Number</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>2</td>
<td>Recofarma Indústria do Amazonas Ltda., Costeira Transportes e Serviços Ltda.</td>
</tr>
<tr>
<td>BA</td>
<td>5</td>
<td>Bahia Mineração (Bamin), Ferbasa, Nestlé Nordeste Alimentos e Bebidas Ltda., Vale and Veracel</td>
</tr>
<tr>
<td>CE</td>
<td>19</td>
<td>Eletra, Ibap, Durametal, FAE, Cemec, Gerdau, BS PAR, C. Rolim, Cameron, Colmeia, Mota Machado, M. Dias Branco, Diagonal, Integral, J. Simões, Magis, Porto Freire, Manhattan, CRD Engenharia</td>
</tr>
<tr>
<td>GO</td>
<td>9</td>
<td>Porto Seco, Usina São Francisco, Mitsubishi, Jaepel, Furnas, Mabel, Campeão Supermercados, Brasílatas, Brasil Food</td>
</tr>
<tr>
<td>MA</td>
<td>6</td>
<td>Vale, Alumar, Cemar, Renosa, Ceste, MPX</td>
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<tr>
<td>MG</td>
<td>2</td>
<td>Kinross Mineração, Votorantim</td>
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<tr>
<td>MS</td>
<td>5</td>
<td>Fibria, Petrobras, Sitrel (Votorantim Siderurgia), Eldorado Brasil, Internacional Paper</td>
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<tr>
<td>PE</td>
<td>5</td>
<td>Philips, Alcoa Alumínio S.A., Gerdau, Estaleiro Atântico Sul, Copergás</td>
</tr>
<tr>
<td>RN</td>
<td>1</td>
<td>Cosern – Companhia Energética do Estado do Rio Grande do Norte</td>
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<tr>
<td>RS</td>
<td>3</td>
<td>Dana Indústrias Ltda., DHB Componentes Automotivos S/A, TMSA</td>
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<td>SC</td>
<td>5</td>
<td>Grupo DASS, Altenburg, Amanco/Mexichem, Simpesc e Termetécnica</td>
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<td>SE</td>
<td>4</td>
<td>Norcom, Cosil, Casanova, Engeb</td>
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<tr>
<td>TO</td>
<td>3</td>
<td>Companhia de Energia Elétrica do Estado do Tocantins – Celtins, Sabina Engenharia Ltda., Italfos Mineração Ltda.</td>
</tr>
</tbody>
</table>

Total 103

* Data collected in 2011.
2.6 Regional development

IEL implemented another program in 2004, with the support of the Ministry of Integration, which also emphasized regional development. The Program for the Development of the Mesoregion of the Jequitinhonha and Mucuri Valleys – one of the poorest regions in the country – was conceived to bolster sustained local development through the promotion of business activities that generate jobs and income and increase the social capital of the region.

The Program is a milestone among projects designed to encourage entrepreneurship while promoting a social agenda. The Program focused its activities in six sectors and local productive arrangements – beekeeping, aquaculture and fish farming, fruit picking, micro distillery cachaca, lumber and furniture manufacturing, precious stones and stone art. Over 100 municipalities throughout the states of Bahia, Minas Gerais and Espírito Santo were involved in the Program and developed projects aimed at fostering the six sections mentioned above.

The results obtained by the Program contributed in an important way to the development of the municipalities of the mesoregion of the Jequitinhonha and Mucuri Valleys. The project for the sale of precious and semi-precious stone artwork benefitted the 100 members of the Arte em Pedra Association, in Araçuai, Minas Gerais. They received financial support to attend a gem cutting course at the Senai branch in 2008 and began to produce artwork with the stones and also to cut gems with the aid of tools, individual
protective gear, computers and electronics equipment. The precious stones, which had formerly been sold unhewn, are now cut and applied to ceramic pieces. With the support of the Program, the association opened a store at the city’s airport to sell the stone art in August of 2007.

Another traditional sector to reap the benefits of the program were the *cachaca* distilleries. In 2007, the unit for homogenization, storage, bottling and commercialization of *cachaca* in Itanhém (BA) and Araçuáí and Jequitinhonha, Minas Gerais was inaugurated. The project encouraged the producer association of Araçuáí (MG) – *Cachaçaboa* – to form a cooperative which, in turn, contributed to increase production in the region.

The Program also provided support for the Beekeeper Association of the Mucuri Valley to open a store for the sale of honey in 2008. To help this sector, the Program purchased specialized technical equipment, computers, laboratory equipment and harvesting furniture in order to conform the processing of honey and other byproducts to the sanitary norms required by the oversight agencies. Approximately 300 beekeeping families were benefitted by the project. During the five years it was running, the project strengthened the business side of the operation, contributed to the generation of jobs and income, stimulated the social capital, encouraged sustainable development via the promotion of regional diversity and by adding value to the products produced in these regions, while combating social inequality at the same time.

Another activity focused on regional development and on the increase in the competitiveness of micro and small businesses, *Empreende Cultura* was conceived in 2006 by IEL and SESI and the Ministry of Culture to strengthen the ties between the industry and cultural actors in the various regions and train them to generate a competitive advantage in the local craft and industrial production. This innovative strategy for regional development brought together the local productive arrangement businesses and the actions developed by the *Pontos de Cultura* by strengthening the image and cultural identity of the region to generate industry competitiveness and sustainable development.

The project has contributed to improve the quality of life, generate jobs and income and completely transform a region of Brazil, which has gone from one level of economic, social and technological development to a much higher one by reinvigorating and strengthening the local cultural identity and image.

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3 These are entities acknowledged by the Ministry of Culture that receive financial and institutional support to develop social and cultural activities in their communities. *Ponto de Cultura* is the umbrella activity under which all of the other programs of the *Cultura Viva* Project are held (www.cultura.gov.br).
Based on the concepts of innovation, entrepreneurship and management, the project provided a benefit to over 60 local productive arrangement businesses in the states of São Paulo, Bahia, Minas Gerais, Rio Grande do Norte, Acre and Paraná.

The Program included brand and patent research and also research of the iconography of the region; training workshops in design and marketing; and consulting for the creation of products that reflect the local culture.

The activities of the project include: strategic planning for the spring water and furniture productive arrangements and the creation of the bottled water brand Inamar in Rio Grande do Norte; the inclusion of references to the forest culture in the design of woodwork and furniture, in addition to organizing an exhibition with corresponding product catalog in Rio Branco (AC); product packaging design for fireworks produced in the local productive arrangement of Santo Antônio dos Montes (MG); setting-up a venue for businessmen to network with cultural organizations and obtaining help from the Liceu de Artes in styling garments in Bahia, where the clothing and plastics transformation sectors are active; and documenting the oral traditions of embroidery artists and using movie theaters to host meetings of businessmen of the embroidery sector of Ibitinga, São Paulo. The outcomes of these projects have been described in greater detail in item 3.8.3.

The project entitled Technological Development of Acre, Bahia and Paraná was another IEL initiative intended to promote the regional development of Brazil. Benefitting the lower part of Acre, in the metropolitan area of Salvador and in São Mateus do Sul (PR), the project was concluded in June 2004. The objective was to promote regional development through the use of various tools and by identifying a portfolio of projects and activities that encouraged strategic planning and achievement of measurable goals so that the regions could further their development.
In the lower part of Acre, the focus was on the lumber, furniture, meat, leather, milk and fish farming production chains. Among the results obtained were the creation of the Furniture Design Center and also of the Center for Research and Development for fish farming. In the metropolitan area of Salvador, the actions focused on tourism and the metal-mechanics and petrochemical chains, one of the highlights being the implementation of the Multisectoral Technology Park. In São Mateus do Sul, in addition to tourism, the initiative focused on the agribusiness sector and mineral goods industry. The technology incubator was reestablished, the Development Agency of São Mateus do Sul was made possible and the Taquaral Basin Preservation Project was implemented.

Lastly, IEL also contributed towards the economic development of the state of Alagoas by means of the Alagoas Project. With the help of Sebrae, the project’s goal was to foster the economic development of Alagoas state by means of activities designed to boost production, to enhance the local and regional technological development, to provide training to businessmen and to promote an entrepreneurial culture.

The project began in 2002 in Maceió and Colônia de Pindorama. The most significant outcome of this project was the 2004 Study on the Economic and Competitive Efficiency of the Agro industrial Sugarcane System, which resulted of a joint effort by IEL, Sebrae and the Federal University of São Carlos. The purpose was to help clarify the factors that affect the sector’s competitiveness, help with the implementation of new ventures in the state and to solve environmental issues. To this end, 25 technical staff of public and private higher education institutions received training to become multipliers of the information received on industrial property and 150 businessmen took part in awareness building seminars.

### 2.7 Innovation

Accounting for 43%4 of the total electric energy consumed in the country, the productive sector is actively seeking ways in which to decrease the weight of this input on its costs and urges that measures that encourage the rational use of this resource be adopted.

Given this scenario, IEL, CNI and Eletrobrás signed an agreement in December of 2005 to develop projects designed to increase energy efficiency under the Program for Efficient and Rational Energy Use. The agreement, which lasted three years, is part of the programs Procel Indústria programs – Industry Energy Efficiency, Equipment and Distribution Material Certification (Proquip) and Industry Development (PTDI).

IEL was put in charge with 2 of the 11 proposals outlined in the Terms of Cooperation. The first project – Quality and Energy Efficiency of the Distribution Transformers – was devised as a response to the demands presented by the distribution transformer industry to update and improve these equipments, many of which lost considerable

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4 Figure taken from the 2011 Energy Balance Report, published by the Energy Research Company – EPE.
amounts of energy. In addition to establishing standardized safety, quality and efficiency thresholds, the project also developed a quality seal (labeling), which contributed to increase the competitiveness of the energy distribution services and thus benefit the production chains that require electric energy.

Within the scope of this project, a survey was conducted to better understand the market and quality of the distribution transformers produced in Brazil. The outcomes obtained upon the conclusion of the survey in 2007 were used to evaluate and improve the performance of these equipments. In all, 32 manufacturers were identified, nine of which are responsible for 90% of the national market and one third were exporters. The main hurdles preventing a greater efficiency of the products were the lack of skilled labor and high quality raw material. The labeling process began in June, 2009, when the transformers used in the electric energy distribution in the country received a label indicating the amount of energy used by a device – efficiency seal.

Another project developed within the scope of the agreement was the publication of 11 technical handbooks targeting industrial agents responsible for the energy optimization of motion systems. The material was produced by SENAI based on the information provided by Eletrobrás. The handbooks are used by Eletrobrás in the Training of High School Level Industrial Agents in Optimization of Motion Systems, which was designed to teach professionals how to lower losses. The title of the handbooks are: Electric energy: concept, quality and pricing; The Electric Motor; Electronic Starters; Pumps; Economic Analysis of Investments; Compressors; Ventilators; Transportation Belts; Charge Motor Coupling; Instrumentation and Control; and Methodology to Run Motor System Diagnostics.

By making efforts to update this industry, the sector introduced changes in advance of the legislation passed after the energy crisis of 2001. Law 10.295/2001 determined minimum levels of energy efficiency or maximum usage levels for machinery and electronic equipment.

The challenge of ensuring industrial competitiveness requires a new business pact, with the adoption of sustainable practices. In order to achieve this goal, social, environmental and governance aspects need to be taken into consideration in the decision-making process.

In this sense, over the course of the next few years, IEL will focus on strengthening management, contributing to the implementation of a managerial model based on the three sustainability pillars. The role of leaders in raising awareness of the importance of social and environmental practices became a valuable tool for a management model that contributes to the sustainability of organizations.
2.8 Successful stories

2.8.1 Bitec

MANAGEMENT OF PLASTER WASTE– IEL/ES

This project explored the possibility of reusing the plaster waste generated from the production of blocs and decorative items back into the productive process and thus decrease the amount of raw materials taken from the environment and also the amount of improperly disposed waste that harms the ecosystem as a whole. The project, conceived by a Chemical Engineering student from the Faculdade Aracruz (FAACZ), proved the feasibility of the concept. The tests performed confirmed the possibility of reusing the waste generated from the production of plaster pieces back into the productive process. Additionally, the project found that up to 10% of the raw material could be replaced by this waste and still the end product properties would conform to the NBR 13.207, an ABNT norm that determines the requirements for construction grade plaster.

Considering that this kind of waste corresponds to roughly 7%, being able to reuse it will make the company ‘ecologically correct.’ With the change made to the manufacturing process, the company will be able to direct resources previously used to dispose of the waste back into the production process and, in doing so, implement changes to ensure a self-sustained production.

GROWING VEGETABLES WITH WATER ORIGINATING FROM THE BRACKISH WATER TREATMENT STATION IN BOM JESUS, CAMPO GRANDE, RN – MOSSORÓ

In Rio Grande do Norte, the project that received the Bitec Award devised a way to use an alternative water source for agriculture in a semi-arid area in which the efficient use of water resources is especially pressing. Thus, the waste water generated by the desalination process was used for growing vegetables for human or animal consumption. The Bitec program, by means of a participatory research developed by an Agriculture scholarship student of the Rural Federal University of the Semi-Arid, along with the Sertão Verde Unit for the Support of Family Agriculture, approached the Bom Jesus community and together conducted a noteworthy initiative. Another positive aspect that came out of the project was that the lead professor took advantage of the real and specific problems faced by company, community and the research results to enrich his lessons.
SOCIAL AND ENVIRONMENTAL RESPONSIBILITY OF THE CRUZEIRO DO SUL LTDA. BEVERAGE COMPANY – ACRE

This project drew attention to the importance of the social and environmental responsibility of a micro business in the city of Cruzeiro do Sul (AC) by discussing issues related to workplace safety, increased productivity and to the search for more efficient technologies. Initiatives in these areas lead to greater profits as well as to greater levels of concern for the environment. As a result, the image of the company as one that takes an ethical stance towards environmental problems was reinforced.

This initiative underscored the importance of implementing programs that raise business sector awareness about the use of more efficient technologies designed to improve the productive processes and are mindful of the environment. There are alternative technologies currently available that contribute significantly towards the productive sector goals of zero greenhouse gas emission, sustainability and social and environmental responsibility which can yield financial, environmental and social gains.

The project for the Environmental Management of the business raised new approaches that were brought to the attention of its leaders. The work pointed out the need to implement preventive and remedial actions and also set forth a broad analysis of the company’s activities which helped in the development of actions to strengthen the initiatives that use clean technologies and to improve the social and environmental conditions of companies in the region in which it operates. The Cruzeiro do Sul Ltda. Beverage Company adopted proactive/innovative strategies that address environmental issues by adopting clean technologies models that conform to the legislative requirements and minimize residue production. The social and environmental responsibility incorporated into the business plans of the Cruzeiro do Sul Ltda. Beverage Company is a testament to its commitment to pursue ethical behavior and economic development. In doing so, it strives to improve the quality of life of its employees and their families, the local community and society as a whole. This stance has become as important as the quality of its products and services, pricing and a strong branding.

2.8.2 Vendor Training Program

TONON BIOENERGY PLANT / MS

In early 2009, the Public Prosecutor’s office of the state of Mato Grosso do Sul (MPE/MS) indicted the Tonon Bioenergy Group for causing environmental damage in the permanent preservation area (APP) and in the legal reservation (RL). By doing so, the MPE/MS attempted to cancel the company’s EIA/RIMA which would, in effect, suspend the company’s license to operate and cause serious problems with its sugarcane vendors. Moreover, this would entail the payment of a R$2 million fine and the suspension of sugarcane processing.

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5 APP and RL are areas protected by the provisions of Law 4.771/65, which instituted the Forest Code. Their use is restricted.
Given this situation, the legal department of the FIEMS System and IEL intervened to sign an agreement in which the plant, under the advice of IEL, would train its vendors and the environmental department of the plant. With this agreement in place, the plant was granted permission to resume operations and did not have to pay the fine imposed by MPE/MS. The social and environmental PQF developed by IEL in Mato Grosso do Sul trained approximately 25 rural producers who supplied sugarcane to the Toron Bioenergy Plant – Vista Alegre Unit in the relevant environmental norms and legislation. The training process took place in classrooms and also through on site consulting at the rural properties involved.

Between March of 2010 and June of 2011, while the Program was in effect, it raised awareness and promoted the development and enhancement of social and environmental issues; contributed to the development of the local supply chain, while also promoting the chain of environmental sustainability. It successfully brought together civil society organizations, the private initiative, land owners (suppliers), partners and the public sector, who simultaneously acted on three different fronts, all of vital importance for the conservation and recovery of the environment and for the sustainable use of natural resources: 1) conservation and rehabilitation of the ecologic processes; 2) biodiversity conservation; 3) sheltering and protection of the indigenous fauna and flora.

Among the benefits of the project, the following should be noted: development of the local supplier chain; promotion of environmental sustainability; investment in social responsibility; management modernization; greater awareness of the need to regulate rural properties; and conformity with the sustainable development policy of Brazil.

Through awareness building and knowledge transfer, Tonon Bioenergy and the Euvaldo Lodi Institute – Mato Grosso do Sul Regional Unit – IEL/MS, allowed the rural producers to embark on a path of continuous improvement that aims to promote sustainability and an increase in agricultural productivity in the Maracaju/MS region.

### 2.8.3 Empreende Cultura

**CULTURE MAKES A DIFFERENCE**

In Acre, the local productive arrangement of lumber and furniture incorporated elements of the forest culture into the design of the products. Six companies developed merchandise inspired in the cultural wealth of the region. The forest culture, which is ubiquitous in the daily life of the locals but not prevalent in the region’s products, was revisited by the project and given a major role as the representation of the riverside dwellers, artists and extractive workers.

The Rosita toy factory of Salvador launched two product lines inspired by the local culture. The first drew inspiration from a local Indian tribe and the second one was based on the Picollino circus school, which supports social projects with street children. In Santo

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6 FIEMS – Federation of Industries of Mato Grosso do Sul.
Antônio do Monte, Minas Gerais, businessmen of the firework productive arrangement have been organizing a fireworks show in celebration of September 7 since 1995. After the pilot program was taken to the municipality, the eighth edition of the event incorporated improvements introduced by the project. Local artistic groups performed during the festivities and a picture and story exhibit showcasing the historical wealth of the city was organized. These images and information on the municipality were then included in the firework labels. Another important benefit brought by the program was the course at Senai, the only one in Latin America on pyrotechnics.

![FIGURE 5. MAP OF THE LOCAL PRODUCTIVE ARRANGEMENTS HELPED BY EMPREENDE CULTURA](image)

Map of the Local Productive Arrangements helped by Empreende Cultura.

**OUTCOMES**

- **Rio Grande do Norte (Local Productive Arrangements for bottled water and furniture in Natal)**
  - Strategic planning of the ‘water routes’ with the orchid nursery identified with help from the university.
  - Development of the Inamar bottled water brand.
  - Creation of a venue for businessmen to network with cultural entities at Solar Bela Vista.

- **Bahia (Local Productive Arrangements for garments and plastics transformation in Salvador)**
  - Identification of a doll modeler in the Pontos de Cultura.
  - Partnership to produce outfits for toys.
  - Creation of a venue for businessmen to network with cultural entities in the Rio Vermelho Theater.
  - Contribution of the Liceu de Artes in the design of garments.
• **Acre (Local Productive Arrangements for furniture in Rio Branco)**
  ◇ Furniture exhibit and publication of product catalog.
  ◇ Design of new products based on the forest concept.
  ◇ Acquisition of geographic denomination based on the concept identified by the project.

• **São Paulo (Local Productive Arrangements for embroidery in Ibitinga)**
  ◇ Use of the oral traditions of embroidery artists in product marketing.
  ◇ Connecting the *Ponto de Cultura* with informal businesses.
  ◇ Use of the movie theater as a meeting point for businessmen.

• **Minas Gerais (Local Productive Arrangements for fireworks in Santo Antônio dos Montes)**
  ◇ Fireworks label design incorporating elements of the local identity.
  ◇ Contribution of the State Institute for Historical and Artistic Heritage in uncovering the iconography of the region and retrieving the importance of the *Congada* and other religious festivities.
  ◇ Planning the Memory Center to identify tourism opportunities in the region.
  ◇ Firework Festival and other events at the SESI of the local production arrangement.

• **Paraná (Local Productive Arrangements for knits in Imbituva)**
  ◇ Determination of the concept to be used in the products of the region.

### 2.8.4 Eco Efficient Industry Program

Introduced in September 2010, the Program promotes the implementation of good practices in eco efficiency and technology transfer on the subject based on synergy opportunities generated by anchor companies with micro, small and medium enterprises (MPME) in the Northeast. The Program focused on the construction, automotive and petrochemical chains.

The Program was developed by IEL/BA with the contribution of the National Confederation of Industry (CNI), the Inter-American Development Bank (IDB), the Brazilian Service for the Support of the Micro and Small Businesses of Bahia (Sebrae/BA), the Department of Industry, Trade and Mining (SICM) and Petrobras. The purpose was to prepare businesses to implement the environmental and sustainability management practices designed to decrease waste, improve quality, productivity and efficiency and to minimize the impact of the industrial activity on the environment.
2.9 Publications

IEL has made an effort, throughout the years, to provide elements to assist the businesses in their strategic decision-making process by publishing material that will help clarify topics related to education, innovation, entrepreneurship, among others, and by releasing studies on specific problems. This section will outline some of the publications produced on social and environmental topics.

2.9.1 Fuel Alcohol

“Fuel Alcohol,” published by IEL with the help of Itaipu Binational and organized by Luiz Antônio Rossafa, Director for Corporative Management of the Paraná Energy Company (Copel), is a collection of 11 articles that outline new paths for the improvement of the energy security policy in the country. The book was launched on August 19, 2009, during the 4th International Conference on Bioenergy. In publishing this book, IEL intended to contribute to the discussion on using ethanol to help solve the energy and environmental problems and to emphasize the business opportunities for companies.

2.9.2 The new sugarcane cycle

This publication came out in 2006 and is part of a body of actions of the Economic Development Program of Alagoas State that were designed by IEL with the help of Sebrae. The book sets forth the outcomes of a market analysis and maps out new commercial opportunities for sugarcane. Its intention is to understand the competitive dynamics of the sector, generating information for decision-making in public policies and for the private sector alike.

2.9.3 The future of industry

This is a collection of articles about the strategic options available to the Brazilian industrial sector in developing its policies. It combines the points of view of businessmen, promotion agencies and the academic community regarding the main topics for the industrial, technological and foreign trade policies. In all, 15 books were published within the scope of the series dealing with the following topics: Capital goods; Pharmaceuticals; Semiconductors; Software; Construction: building houses; Plastics: plastic packaging for food items; Textiles and garments: knit clothing; Capital productivity; Entrepreneurship; Corporate training; Technological trends; The Value of Metrology for industrial development; Corporate training: ideas and practices; Bio-diesel and Production chains.
2.9.4 The image of the engineer in Brazilian society

Released in March, 2010, this publication is a compilation of the research and an overview of the historical, social and cultural context of engineering in Brazil. The work presents the image and the relevance of the engineer and the engineering field in the professional system of Brazil.

2.9.5 Internship Law – All you should know

This handbook presents, in a clear and concise style, information on internships. It discusses concepts and rights and responsibilities of the parties involved in this process. It was drafted with the intention of contributing to the training of the future professionals, as well as promoting curricular updates and closer ties between the industrial sector and research activities.

2.9.6 Eco Efficient Technology Transfer Manual

An outcome of the Project to Support the International Presence of Small and Medium Enterprises (PAIIIPME), the Eco Efficient Technology Transfer Manual was developed by the Euvaldo Lodi Institute (IEL) in collaboration with the Project. The publication serves as a guide to businessmen, entrepreneurs and innovators interested in managing businesses involved in trading new eco efficient technologies.

The manual will be used in the Eco efficient Industry Program, organized by IEL Bahia, which aims to increase the international presence of SMEs by means of training and awareness raising activities to improve the competitiveness and access to markets.

2.9.7 Environmental agenda: environmental management by industries

Produced at the end of the diploma course on Environmental Management in Industry (Cegami) organized by IEL/PB with the State University of Paraíba, the book includes 34 articles written by specialists, master and PhD degree holders that attended the course. The work is divided into three parts and deals with topics such as legislation, social responsibility and environmental education, operational aspects of environmental management and tools for environmental management.
The United Nations Conference on Sustainable Development, Rio+20, will be held at a time when Brazil is poised to initiate a new cycle of sustainable development. The success of this venture lies in our capacity to transform the country into one that is truly competitive in a globalized economy with steep competition.

Megatrends for the 21st century indicate that there will be nine billion people living on the planet by 2025, with a significant percentage of these people aged 65 and above. The trends also foresee an expansion of the urbanization process, with over 70% of the population living in cities; climate change, which will impose new sustainable processes for production, consumption and coexistence; consolidation of the globalization process, especially with the shift in economic power from the USA and Europe to the BRICs and Asia and Africa; a need to change the energy matrix of the world towards one that focuses on clean, economical and sustainable energy production. These megatrends represent a challenge for humanity and an opportunity for nations.

Among the various prospects for the 21st century, competitiveness and the capacity to innovate with an eye on sustainability and social responsibility will be the determining factors for the success of a country. Brazil is making strides to become the fifth largest economy in the world in great part due to the strength of our agribusiness, industry and service sectors. We are undergoing a new development cycle in the midst of a crisis of the developed economies. We boast clean energy, rich biodiversity and important pre-salt oil reserves. We will also host the 2014 World Cup and the 2016 Olympics.

However, the global situation imposes that we urgently improve our productivity and competitiveness and, as result, we must focus on training our workforce. The country will only be able to fully develop and gain a competitive advantage in the globalized world if the majority of its companies, including medium and small scale companies, make progress in terms of their capacity for management, add value and develop technology.

To bring this level of development to Brazil, the first order of business is to provide training to leaders of businesses of all sizes, sectors and areas of the country in order to intro-
duce innovation into all companies. This goal presents challenges not only to the country but, most of all, to the businesses. Countries will only be competitive if its businesses are also competitive and the latter must constantly bring innovation to its processes, products, market participation and its own business to stay on the cutting edge.

In their pursuit of competitiveness, companies today must also concern themselves with including sustainability in all of their business practices. A company that does not consider sustainability as one of its priorities will become less competitive, in particular because customers value companies that seek to adopt fair practices in their dealings with employees and community, that conserve the environment and that not only adopt compensatory measures to minimize their environmental and social impact, but that are conscientious in relation to the risks that their business presents.

More than embrace social and environmental causes, a modern day company must incorporate the concept of sustainability, its leaders must disseminate it and promote actions in this area. In this sense, the business leaders have a strategic role to play in keeping their companies competitive: they are responsible for mainstreaming the sustainability culture, for managing people, for meeting customer needs, for exploring new business opportunities and for implementing processes that promote innovation and add value to the company.

It is of utmost importance that leaders understand that making sustainability a priority will positively affect their company’s bottom line and realize its value in the business, such as: products with a higher added value; lower insurance costs as a result of a reduction of the business risks; saving on inputs (raw materials, especially the non-renewable natural ones); reduction of fiscal and environmental fines; better company image; greater credibility with share holders; cooperation with interested parties; greater ease in obtaining loans and business endurance.

This outlook underscores the important role IEL has in Brazil’s development. As the entity responsible for providing training to businessmen, executives, entrepreneurs and managers, as well as fostering the development of businesses and their value chain, IEL has a great challenge ahead but also an opportunity to contribute to increasing the competitiveness of Brazil’s industry.


