Education in Brazil has advanced in terms of school access, but its quality is still questionable. That may require reformulation of the entire educational system.
Economy, politics, and policy issues
A publication of the Brazilian Institute of Economics. The views expressed in the articles are those of the authors and do not necessarily represent those of the IBRE. Reproduction of the content is permitted with editors’ authorization. Letters, manuscripts and subscriptions: Send to thebrazilianeeconomy.editors@gmail.com.

Chief Editor
Vagner Laerte Ardeo

Managing Editor
Claudio Roberto Gomes Conceição

Senior Editor
Anne Grant

Production Editor
Louise Pinheiro

Editors
Bertholdo de Castro
Solangue Monteiro

Art Editors
Ana Elisa Galvão
Marcelo Utrine
Sonia Goulart

Contributing Editors
Kalinka Iaquinto – Economy
João Augusto de Castro Neves – Politics and Foreign Policy
Thais Thimoteo – Economy
Fernando Dantas – Economy and Public Policy

IBRE Economic Outlook (monthly)
Coordinators:
Regis Bonelli
Sílvia Matos

Team:
Aloísio Campelo
André Braz
Armando Castela Pinheiro
Carlos Pereira
Gabriel Barros
Lia Valls Pereira
Rodrigo Leandro de Moura
Salomão Quadros

Regional Economic Climate
Lia Valls Pereira

The Getulio Vargas Foundation is a private, nonpartisan, nonprofit institution established in 1944, and is devoted to research and teaching of social sciences as well as to environmental protection and sustainable development.

Executive Board
President: Carlos Ivan Simonsen Leal

Vice-Presidents: Francisco Oswaldo Neves Dornelles, Marcos Cintra Cavalcanti de Albuquerque, and Sergio Franklin Quintella.

IBRE – Brazilian Institute of Economics
The institute was established in 1951 and works as the “Think Tank” of the Getulio Vargas Foundation. It is responsible for calculating of the most used price indices and business and consumer surveys of the Brazilian economy.

Director: Luiz Guilherme Schymura de Oliveira
Vice-Director: Vagner Laerte Ardeo

Directorate of Institutional Clients:
Rodrigo de Moura Teixeira

Directorate of Public Goods:
Vagner Laerte Ardeo

Directorate of Economic Studies:
Mário Lago Couto

Directorate of Planning and Management:
Vasco Medina Coeli

Directorate of Communication and Events:
Claudio Roberto Gomes Conceição

Comptroller:
Célia Reis de Oliveira

Address
Rua Barão de Itambi, 60
Botafogo – CEP 22231-000
Rio de Janeiro – RJ – Brazil
Phone: 55(21)3799-6840
Email: ibre@fgv.br
Web site: http://portalibre.fgv.br/
**NEWS BRIEFS**

4 Record-high current account deficit in May … but trade surplus in June … confidence still dropping … Petrobras oil production stagnant … capital inflows plunge … inflation shoots through target ceiling … Campos: Brazil “worse off” … Rousseff popularity sliding … PT acts to move her to the left … Cardoso criticizes PT economic policy … car and furniture tax discounts extended.

**POLITICS**

8 Why Rousseff is still the front runner

The president has been able to hold together the federal governing coalition, but many coalition partners are heading away from the PT in local elections. João Augusto de Castro Neves explains why, having dodged the risk of World Cup chaos, the standing of Rousseff and her party with their political base of support is unlikely to shift much before October.

**COVER STORIES**

10 How to improve education quality

Today more Brazilians realize the benefits of an educated workforce in terms of higher and more widely distributed incomes. Yet despite progress in access to education, labor productivity remains stagnant. Kalinka Iaquinto analyzes the current situation to see how education could contribute to a more productive workforce.

**18 Can higher education promote innovation?**

Even though more Brazilians now have access to a college education, experts say there are still not enough graduates to ensure the research and innovation needed for development. The main deterrent to progress in tertiary education is the poor quality of previous education. Thais Thimoteo investigates what might be done to resolve the problem.

**SEMINARS**

24 A high-voltage discussion

The impact of one of the worst droughts ever recorded on the sustainability of the energy sector was a priority for discussion at the IV Seminar on Brazilian Energy Matrix and Security sponsored by the Brazilian Institute of Economics on June 2 in Rio de Janeiro. Solange Monteiro reports.

29 Ambitious sanitation goals

Poor sanitation has meant uncountable financial losses because water networks are inefficient; it also means a much lower quality of life for Brazilians exposed to the diseases that result from untreated sewage. Solange Monteiro reports on strategies to reverse the situation discussed at a May IBRE seminar on “Sanitation and Water Management.”

**INTERVIEW**

36 Reforms needed urgently

Roberto Lavagna, the Minister of Economy (2002–05) who successfully negotiated the restructuring of Argentine debt in 2005, talks to Solange Monteiro about the effects of the recent judgment of the U.S. Supreme Court in favor of creditors who opted out of the restructuring, and about why growth will be difficult for both Argentina and Brazil.

**IBRE ECONOMIC OUTLOOK**

41 It is time for change

With economic policy showing clear signs of fatigue and monetary policy movements not particularly successful, the confidence of both individuals and businesses has plummeted. The most difficult task will be to make economic policy credible enough to attract the private investment the economy needs if it is to revive.
ECONOMY

Current account deficit hits record high in May
As Brazilians buy abroad and foreign companies in Brazil send profits and dividends home, Brazil had a current account deficit of US$6.6 billion in May, above the previous record for the month of US$6.4 billion, the central bank reported. (June 24)

May employment worst for the month since 1992
In May only 58,836 jobs were created, down 18.3% from May 2013 and the least for the month since 1992; total job vacancies increased 0.14% month-on-month. Meanwhile employment in construction, which represents about 8% of total Brazilian employment, shows signs of weakening. In April, only 4,300 vacancies opened in construction, the least for that month since 2003. Construction jobs fell 3.1% year-on-year in April, after a fall of 0.5% in March. (June 23)

Bank lending and delinquencies both up
In May outstanding bank loans rose 1.0% from April, the central bank reported. Delinquent loans (past due at least 90 days) rose to 5.0% from 4.8% in April. (June 25)

Confidence still dropping
The Consumer Confidence Index, calculated by the Brazilian Institute of Economics, went up 1.0% between May and June, but not enough to change the downward trend that began in November 2013 last year. (June 26). The Industry Confidence Index decreased for the sixth consecutive month to 3.9%. It appears that the business environment is still deteriorating. (June 30)

Trade balance posts a surplus in June
The June trade balance was in surplus by US$2.4 billion but still had a cumulative deficit for the year of US$2.5 billion—though worrying, that is still less than the 2013 first-half deficit of US$3.1 billion. The improvement was mainly due to the oil account trade deficit, which dropped from US$119 billion in 2013 to US$8.7 billion this year. (July 1)

Petrobras production stagnating
State-owned oil company Petrobras announced that it produced 1.9 million barrels of oil in May, and celebrated the first 500,000 barrels from the deep sea oil field on the Southeast coast. However, production is still below the 2 million in 2010; it appears that so far deep sea oil is not boosting production but simply offsetting the decline in mature fields. (July 1)

Capital inflows plunge 64% in first half
The inflow of dollars fell by US$3.2 billion (64%) in the first half of 2014, compared with US$8.9 billion in 2013. With fewer dollars coming in, the exchange rate would have shot up if not for daily intervention by the Central Bank through its swap program (equivalent to selling dollars). The program was recently extended through December. (July 3)

Inflation breaches target ceiling
Official inflation was 0.4% month-on-month in June, breaching the central bank’s 6.5% target for the year by 0.2 percentage points. Service and air transportation prices led the rise, partly because of high World Cup demand. (July 8) The central bank quarterly report raised the 2014 inflation forecast from the 6.1% projected in March to 6.4% and cut its growth projection from 2% to 1.6%. (June 26)
**Politics**

**Campos: Brazil is “worse off”**

Speaking in Brasília, Brazilian Socialist Party (PSB) presidential candidate Eduardo Campos said that for the first time in 20 years the next administration will find the country worse off than it was before the previous administration. He said, “The country has stopped growing, inflation has returned, and interest rates have skyrocketed.” Referencing the public disorders of a year ago, Campos former governor of Pernambuco state also said “No one can impede the popular will when it arrives in the streets.” (June 15)

**Rousseff poll ratings dropping; runoff likely**

A recent survey by the Sensus Institute found that President Dilma Rousseff (Workers’ Party, PT) would get 32.2% of the electoral vote, down 1.8 percentage points from April. Her main opponent, Aécio Neves (Brazilian Social Democratic Party, PSDB) would get 21.5%, up by 1.6 percentage points, and Eduardo Campos (Brazilian Socialist Party, PSB) has 7.5%. In a likely runoff, Rousseff would beat Neves by 37.8% to 32.7%—tighter than the 38.6% to 31.9% April projection. (July 2)

**PT bids to force Rousseff to the left**

With President Dilma Rousseff now formally its candidate, the Workers’ Party (PT) is creating a five-member working group as a “bridge” between the PT National Executive Committee and Rousseff’s campaign committee. Both the government and the PT party want to contrast the more pro-business and orthodox economic policies of Neves with Rousseff’s more pro-poor social policies. (June 23) To keep the government’s political and social base united, former president Luiz Inácio Lula da Silva plans to be a more “proactive” political force in a second Rousseff term. “His presence will loom as large as his political leadership,” a close aide told Valor Econômico newspaper. (July 6)

**Cardoso criticizes PT economic policy**

At an event to promote tourism in São Paulo, former president Fernando Henrique Cardoso (PSDB) criticized Workers Party (PT) political use of the World Cup and called for a change in the direction of the economy. He charged that public finances were abused, public debt too high, and inflation contained only by controlling prices. (July 7)

**Economic Policy**

**Government extends tax exemptions for cars and furniture**

The government has confirmed it will retain the discount on taxes for automotive and furniture products through December, at an estimated loss of revenue for 2014 of R$1.92 billion. Minister of Finance Guido Mantega said that auto industry production and sales, which fell in the first half of the year, are likely to recover in the second half. Mr. Mantega is also optimistic that the economy will revive in the next few months and said that the first-half drop in retail sales “seems to be reversing.” (July 1)
Stay up-to-date with the latest news from FGV in English!

Follow us on your favorite social media network:

- **Linkedin**
  - www.linkedin.com/company/FGV-Brazil

- **Google Plus**
  - www.google.com/+FGV-Brazil

- **Facebook**
  - www.facebook.com/FGVBrazil

- **Twitter**
  - www.twitter.com/FGVBrazil
EDUCATION TIES WITH INFRASTRUCTURE as the main problem holding Brazil back. To generate meaningful economic growth, the country needs to invest in quality education that qualifies workers appropriately. The Organization for Economic Cooperation and Development (OECD) reports that in the last decade, half the growth in developed countries was due to better worker training. Ricardo Paes de Barros and Rosane Mendonça have shown that for each additional year of schooling, Brazilian growth of income per capita increases by 0.35%.

Poor education limits student work opportunities, creates mismatches between worker skills and company needs, and thus stifles productivity. Brazil’s several high-quality free public universities must teach students arriving from the notoriously weak system of basic public education. Yet in 2011, Brazil spent, on average, US$10,000 per college student—almost five times what it spends on students in basic education.

Recent governments have recognized the problem. President Fernando Henrique Cardoso created the first National Education Plan, redirected educational resources toward the lower grades, and improved access to and attendance at primary schools through programs like School Grant, which pays poorer families to send and keep their kids to school. President Lula further greatly expanded the School Grant program and opened over 200 technical schools. President Rousseff has allocated a percentage of deep sea oil revenues to education.

Today many more Brazilian children are in grades 1–9; they stay in school longer, and many more go to college. The quality of education is improving (though only gradually), with Brazil’s international PISA scores slowly rising from the bottom. However, over 8.5 million Brazilian primary and secondary students are at least two years behind the grade level for their age, high school drop-outs are far too numerous, and high school students have few options for vocational training.

It is critical to rethink the education system in terms of student needs. The current curriculum is rigidly outdated, incapable of promoting innovation and adaptation to technological progress. Ideally, the core curriculum should focus on such basic skills as reading, writing, and math, but because each student has individual needs and the labor market requires flexibility, particularly after 8th grade students should have some choice in what they study. Vocational training should be introduced as early as 8th grade to help keep students in school.

It is even more important to rethink how educational services are delivered. The Unites States has many examples of using information technology for that purpose. One pioneered in New York and expanding to other cities is Teach to One: The program uses a computer algorithm to ensure that students master one concept before moving on to another, at their own pace. (Ideally, for instance, a student who needs to work on fractions but is interested in sports can get a program that combines both.) This is the leading edge of the “blended learning” movement that is harnessing technology to help teachers deliver personalized lessons for every child.

The new information technology promises to greatly enhance teacher productivity while personalizing lessons for each child. Building more schools and hiring more teachers no longer makes sense. What does is to invest more in training current teachers and building up public school information technology infrastructure. Experiments like Teach to One have already been tested elsewhere. Let’s learn from what they can teach Brazil.
Why Rousseff is still the front runner

João Augusto de Castro Neves

IN THE PAST FEW WEEKS President Dilma Rousseff was able to dodge two potential risks to her reelection. On June 21, she won the Workers’ Party (PT) nomination, putting to rest speculation not only that former president Lula might replace her in the ballot (although Brazil’s election code allows for candidates to be replaced up to a few weeks before the election), but more importantly, that allied parties would jump ship. With the deadline to declare alliances over, most parties within the ruling coalition have decided to back Rousseff for reelection, providing her with an ample advantage over opposition candidates when it comes to campaign time on TV. Rousseff will have nearly twice the time allotted to the two main opposition candidates combined, Aécio Neves of the Brazilian Social Democratic Party (PSDB) and Eduardo Campos of the Brazilian Socialist Party (PSB).

The story at the local level, however, is a bit more challenging for Rousseff. Many of the parties that formally support her at the national level are striking coalitions within the states against the PT and Rousseff. In the five most populous states (roughly 50% of the population), the PT has a strong candidate for governor only in Minas Gerais state—which happens to be Neves’s home state—and possibly in Rio de Janeiro state. For comparison, in 2010 the PT and its allies had strong candidates in all five major states; they won in Rio de Janeiro, Rio Grande do Sul, and Bahia and lost in São Paulo and Minas Gerais states.

Nevertheless, while local political dynamics hint at a more competitive ballot in October, the impact on how Rousseff performs nationally is likely to be limited. Pundits often overplay the ability of local and regional politicians to affect the vote in a presidential election. Elections are determined much more by national media campaigns than by what local and regional politicians are saying. While Rousseff’s disadvantage in the states may hurt at the margin, the impact should not be overstated.

castroneves@eurasiagroup.net
The second risk to Rousseff’s reelection was World Cup chaos. That did not happen. Even though the overall impact of the World Cup on the election will be limited, the change in sentiment toward the games helped dissipate that source of uncertainty about the Rousseff government, which was overplayed in local and international media. Recent polling data suggests that what is being regarded so far as a successful World Cup, with the accompanying respite from protests and strikes, may even marginally benefit the president in the near term.

At this juncture, the key risk factor to Rousseff’s reelection is the unfavorable economic situation. High inflation and slow growth will continue to be a drag on Rousseff’s poll numbers, and most other indicators of economic activity have also been coming in negative, particularly investment and consumer and business confidence. However, while Brasilia’s near-term response to the economic slowdown will confound expectations and exacerbate negative sentiment, the political fallout for Rousseff is likely to be contained. In coming months inflation is expected to recede somewhat and the labor market is not expected to weaken much before the election.

While middle class discontent still lingers, raising the risk of voter fatigue with the PT, the bottom line is that the standing of Rousseff and her party with their political base of support is unlikely to shift much before October. Much of the discontent that triggered the protests since last year is concentrated in the upper middle classes. While those demonstrations were enough to take Rousseff’s approval ratings down from close to 70% to slightly below 50%, the bulk of the president’s supporters are the lower middle classes, which have in recent years benefited more from government policies (credit expansion, wage increase, Family Grant Program, the housing program). While a tougher economic environment has started to undermine support for the government within those classes, Rousseff should have enough momentum to guarantee her victory in October.

Although Rousseff is still favored to win reelection, the election is still expected to be competitive. Most polls have recently started to indicate that there will be a second-round run-off, and the president’s current margin over the main opposition candidate, Aécio Neves of the PSDB, would probably narrow to single digits in a run-off. By Brazilian standards, this would be a tight victory. In the last three presidential elections, the margin between winner and runner-up has been in the double digits: Rousseff over José Serra in 2010 by 12 points; Lula 21 points over Geraldo Alckmin in 2006 by 21 points; and Lula over José Serra in 2002 by 22 points.
Education in Brazil has advanced in terms of school access, but its quality is still questionable. That calls not just for more and better investments in education but perhaps also for reformulation of the entire educational system.

Kalinka Iaquinto

IT IS NOT NEWS THAT EDUCATION is considered the foundation for development of people, societies, economies, and nations. Yet only recently have Brazilians made it a priority. A 2014 survey by the National Confederation of Industry (CNI), in partnership with IBOPE Intelligence, found that better-quality education had moved up from seventh position in 2007 to third in terms of what Brazilians are concerned about, jumping above health and combating violence and crime.

In the postwar period, Brazil sought industrialization at the expense of education, but today more Brazilians realize the benefits of an educated workforce in terms of higher and more widely distributed incomes. Yet despite the progress in access to education, labor productivity remains stagnant. The question is why.

The answer is that despite broader access, the quality of education is very poor. There is an urgent need not just to invest more resources in education—a controversial point—but also to improve its management and accountability, monitor it better, make it more responsive to labor market demand, and develop and adopt new technologies.

**Education and productivity**
The Organization for Economic Cooperation and Development (OECD) points out that in the last decade, half the growth in developed countries was due to better workforce training. And the relationship holds even beyond the older developed countries. “Long before us, South Korea recognized the importance of education. Even Argentina, despite repeated economic policy blunders, had greater productivity than we have,” says Samuel Pessôa, associate researcher, the Brazilian Institute of Economics (IBRE). Nelson de Cheri Karam, director of the School of Labor Science at the Trade Union Department of Statistics and Socioeconomic Studies (Dieese), adds that, “Education alone may not ensure that workers will have jobs or better pay, but it is an important necessary condition.”

The U.S. Conference Board noted that in 2013 average earnings for Brazilians was US$10.80 an hour, the lowest among Latin American
countries (compare US$20.80 in Chile; US$16.80 in Mexico, and US$13.90 in Argentina). “It takes three Brazilian workers to produce as much as one South Korean, four as much as one German, and five as much as one American. We have very clear productivity deficiencies we must address,” says Rafael Lucchesi, director general of the National Service of Industrial Learning (SENAI) and director of Education and Technology of National Confederation of Industry (CNI). He considers the Brazilian educational system today to be too academic and believes it is not providing enough technical training.

The World Economic Forum (WEF) productivity ranking for 2013–14 put Brazil at 56th among 148 countries, behind Chile (34th), Panama (40th), Costa Rica (54th) and Mexico (55th). At the top were Switzerland, Singapore, Finland, Germany, and the United States. The WEF blames the low position of nations like Brazil on an insufficient degree of competition and gaps in terms of education and training, technology, and innovation that prevent many companies from moving up to higher-value-added activities. A 2013 CNI study found that in 2011, 67% of mining and manufacturing companies were having problems hiring skilled professionals. Two years later that was still true of 65%. The great problem is finding machine operators (90%) and technicians (80%).

To reach even half of US productivity Brazil would have to increase productivity growth from the current 1% to about 2–2.5%. Pessôa thinks that will take 40 years.

High schools and vocational training
Change is possible, but it calls for concrete action at every level from basic to higher education. The 2013 Census of Basic Education found that in 2012 Brazil had raised enrollment in daycare and preschool, reduced the number of failing students in elementary and middle schools, and cut the number of dropouts to 2.7%, half the number in 2007. On the other hand, education quality had not improved much, particularly in high school, the bridge between young people and the labor market. In 2013 enrollment in high schools was the lowest since 2007—8.3 million (1% lower than in 2012). There are still 1.5 million youths aged 15–17 years not in school. But “the problem of high schools is not just a Brazilian problem,” adds Daniel Cara, general coordinator of the National Campaign for the Right to Education. He explained that since in all nations high school is the end of formal studies for most people; it should provide skills and training for them to make a decent living.

“It takes three Brazilian workers to produce as much as one South Korean, four as much as one German, and five as much as one American. We have very clear productivity deficiencies we must address.”

Rafael Lucchesi

Brazil: Education numbers

50,545,050 students enrolled in basic education

447,463 students enrolled in the Pronatec in 2011 up from 318,404 in 2008

Sources: Ministry of Education and government statistics agency IBGE.
“The problem of technical education is to identify where the world and the labor market are going.”

*Fernando de Holanda Barbosa Filho*

According to Marcelo Neri, Minister of the Strategic Affairs Secretariat (SAE) of the Presidency, surveys by the Getulio Vargas Foundation show a change in the public mindset in relation to education. He stresses the need to involve more young people in the process of change: “When you ask someone 15 to 17 years old why he is not in school, over 40% reply that they have no interest,” he says, adding that reaching the students is the great challenge because at 51 million they constitute the largest share of Brazil’s population they have ever had.

Today, only 85% of Brazilians between 15 and 17 are enrolled in school, and only 50% of those are in the appropriate grade. “To be able to use today's information and communication technologies effectively, you need to at least have high school,” says IBRE researcher Fernando Veloso, who advocates a curriculum model that is less binding and offers more electives—because modern jobs require flexibility.

**Outdated curricula**

Veloso believes that curricular changes are central if the country is to create and absorb technology. SENAI’s Lucchesi warns, “We need to be bolder. We cannot have a school of the 19th century, with teachers of the 20th century, if we are to interest students of the 21st century.”

**Planning: The foundation for good management**

The consensus is that regardless of the resources made available for education, good management is essential to make progress. And good management requires planning. “The main problem in Brazil, especially in education, is that we do not have a culture of planning,” says João de Monlevade, consultant ant to the Federal Senate. Carlos Sanches, former president of the National Union of Municipal Education, agrees: “Before knowing how much money we will have and how much we will be able to spend, we need planning. As long as there is efficient planning, there will be efficient and effective spending.”

Seeking to address this problem at the local level, several organizations have come together to create an electronic platform, Conviva Educação (www.conviva-educacao.org.br). It provides municipal education secretaries with free management tools to guide them in everything from budgeting and human resources management to planning such specifics as school meals. “The Conviva provides training and self-instructional content—tools that often municipalities do not have access to,” says Maira Moraes, project manager for the Natura Institute, one of the partners in the initiative. About 3,000 of the 5,570 Brazilian municipalities participate.
Vocational technical education, experts agree, should be greatly expanded. Building on the technical schools established in recent decades, the federal government in 2011 launched the National Program for Access to Technical Education and Employment (Pronatec) to expand access to vocational training. The first phase invested US$6.4 billion and by year-end 8 million students should be enrolled. The second phase will provide 12 million places in technical schools between 2015 and 2018.

But Pronatec has some challenges. “The problem of technical education is to identify where the world and the labor market are going,” says IBRE researcher Fernando de Holanda Barbosa Filho. In other words, the skills taught in high school should be those the economy is demanding. “Today, we have almost no idea whether regions, states, or the country itself offer the courses the labor market requires. This is a serious gap,” says DIEESE’s Karam. Veloso concludes that “Today we need much more basic skills to know how to apply knowledge in practice and learn to solve problems and interpret texts. These are points on which our students are very weak.”

“Today, we have almost no idea whether regions, states, or the country itself offer the courses the labor market requires. This is a serious gap.”

Nelson de Cheri Karam

Basic education

High school education can only build on foundations laid in basic education, which depend on the quality of primary and middle school teaching. Simon Schwartzman, president, Institute for Work and Society Studies, pointed out that teachers need better training and pay. Although in 2008 the National Salary Floor for Teachers Law was approved, many states and municipalities do not comply with it because they lack resources. “We have made progress regarding college teachers, but especially in the final years of middle and high school very few teachers are licensed,”

Improving school governance

In Pinheiral county in Rio de Janeiro state, which has about 25,000 inhabitants, to create closer ties between public schools and the community the Department of Education has created both 12-member School Councils that have representatives from faculty, students, and the public, and separate Student Councils.

“She explained that the councils will help the department to craft pedagogical proposals that meet local needs.

The Student Councils participate in the day-to-day decisions of the school and “all schools now have student representatives who meet monthly with a city hall representative to discuss issues of their interest and coordinate what is done with other city departments,” Santos said. She noted that the municipality is also addressing the drug problem to prevent truancy.
says Alejandra Meraz Velasco, technical manager of the NGO Education for All.

According to the OECD, less than half of primary school teachers in Brazil work in just one institution, and only 40% of Brazilian teachers in early education have full-time positions, against an international average of 82%. In Brazil, more than 90% of lower secondary teachers had completed higher education, but nearly 25% had not completed a teacher-education program; the world average is 90%. “For a child to remain in school there must be quality, and for this the teacher needs training, compensation and appreciation,” says Carlos Sanchez, deputy director of the National Campaign for the Right to Education.

More resources?
The new National Education Plan (PNE) commits the government to investing 10% of GDP in education in the next 10 years. IBRE’s Barbosa Filho is critical: “The school-age population in coming years will fall so the average expenditure per student will naturally increase. Furthermore, several studies show that student learning is not related to the amount spent per student. … The problem of education is management, not lack of money.”

SENAI’s Lucchesi agrees. He points out that “Brazil already spends more than 6% of GDP in education—about the same average as OECD countries. This demonstrates that we have a management challenge.”

Carlos Sanches, former president of the National Union of Municipal Education Managers, does not agree: “Every US$1 invested in education increases GDP by US$0.87. … Of all the variables that can affect GDP, investment in education has the greatest impact.” He also stresses that the right to education is in the Federal Constitution—“It is a basic right fundamental for life and human dignity.”

This opinion is challenged by IBRE’s Pessôa: “Today, the government already spends an adequate amount. South Korea has never committed more than 5% of GDP even when it was poorer than we are.” Veloso adds that “We should focus less on the spending on education and more on its effectiveness.” Velasco notes that “In fact Brazil is investing the same share of GDP as OECD countries, but its spending per student is only a fifth of, for example, the US.”

Accountability matters
The experts agree that more resources alone will not be enough to change education in Brazil. As Schwartzman says, “More money should be given very carefully and associated with very clear programs and targets and assessments of outcomes.”

In the report *The Learning Curve*, written by The Economist Intelligence Unit, Brazil, ranked 38th, is among emerging economies, such as Argentina and Mexico, that have increased funding for education but recorded a fall in school performance and cognitive abilities.

Education in Brazil is largely provided by states and municipalities. The federal government is directly responsible only for certain public universities, but Veloso explains that it does provide some resources and set national educational standards. It is therefore essential to find ways to get local governments to carry out their duties efficiently. And Daniel Cara believes the responsibilities of governments at all levels need to be rethought. He spells it out this way: “Today, for every US$1 invested in education, the federal government provides US$0.18, states US$0.40, and municipalities US$0.42. Municipalities, which collect the least, have to make the most effort. Establishing a standard cost per student would mean education funding would be shared more equally among federal government, states, and municipalities.” This would require the federal government to transfer an additional US$20 billion annually to states and municipalities to begin to ensure quality education for all Brazilians.
How will we manage in 2050 when there are 9 billion of us on earth?

At GDF SUEZ, we develop innovative efficient energy solutions to meet today’s and tomorrow’s needs.

Global player in energy: power, natural gas, energy services.
IN MAY THE FEDERAL GOVERNMENT approved the National Education Plan (PNE), which sets educational strategy and defines 20 goals for the next 10 years. According to Daniel Cara, general coordinator of the National Campaign for the Right to Education, the expectation is that Brazil can reduce the education gap relative to developed countries.

The increase in education funding is noteworthy. The goal is to invest 10% of GDP in education over 10 years. Brazil currently spends 6.4% of GDP (US$122 billion), including scholarships, student loans, and transfers to private educational institutions. Cara points out that establishing a standard cost per student is essential to ensure that education is based on a minimum standard of quality.

To finance these goals, the federal government counts in part on oil royalties and Social Fund of the deep sea oil. However, Henrique Paim, minister of education, said that states and municipalities will also have to contribute to meet the plan’s goals, among which are:
Universal access by 2016 to preschool and expansion of kindergartens.

Universal access to primary and middle school education for children aged 6 to 14, with at least 95% of students in the appropriate grade.

Universal access by 2016 to high school for students aged 15 to 17 with net enrollment in high schools increased to 85%.

Universal access to basic and special education services.

Adequate reading and writing skills taught to all children no later than the end of the third grade.

Offer full-day education in at least 50% of public schools.

Enhance the quality of basic education in all grades and raise the national average on the Basic Education Development Index.

Raise average years of schooling to 12 years, targeting the poor population.

Raise the literacy rate of Brazilians aged 15 years and up to 93.5% by 2015; eradicate absolute illiteracy and reduce functional illiteracy.

Integrate at least 25% of places in the Youths and Adults Education program in primary and secondary education.

Triple enrollment in high school vocational and technical education.

Raise higher education enrollment to 50% of the 18-24 year population, while ensuring the quality of education.

Increase the number of teachers holding master’s and doctoral degrees to 75% of total faculty.

Gradually increase enrollments in graduate studies to 60,000 master’s and 25,000 doctoral students.

Draft a national policy for training teachers.

Raise the number of basic education teachers who hold master’s and doctoral degrees to 50%.

Value basic education teachers in the public schools and raise their average income to the same level as professionals with equivalent education.

Ensure career plans for basic and higher education public school teachers.

Ensure conditions for effective democratic management of education.

Expand public investment in education to 7% of GDP in five years and 10% in 10 years.

Source: National Education Plan (PNE).
ALTHOUGH MORE BRAZILIANS have had access to a college education in recent years, experts say there are still not enough college students to ensure the research and innovation needed for development, even though from 2002 to 2012, enrollment in undergraduate courses more than doubled, from 3.4 to 7 million, and enrollment in master’s and doctoral courses went from 106,000 to 203,700.

“More students are completing high school, but that increase has not been reflected in higher enrollment in undergraduate and graduate courses, although recently, the government Financing Fund for Higher Education Students (Fies) and its scholarship program (ProUni) have attracted more students to higher education, especially in science, technology, engineering, and mathematics—our main weakness,” observed Naércio Menezes, professor, Public Policy Center of the Institute of Education and Research (Insper).

The main deterrent to progress in tertiary education is the same as in the lower levels: the poor quality of previous education. Rodrigo Leandro de Moura, researcher at the Brazilian Institute of Economics (IBRE) says, “The Ministry of Education often takes away certification of courses in private universities due to poor teaching quality. To improve the quality of private universities it is necessary to increase competition by means of better teaching and better infrastructure for public universities. But it is also necessary to address the low quality of education in primary, middle, and high school. The student arrives at college unprepared.” De Moura argues for
increasing revenues of public universities by charging those who can afford it a monthly fee and providing scholarships for students who cannot.

Menezes says it is difficult to compare the quality of higher education in Brazil with other countries because there are not many international rankings — unlike basic education, the quality of which is measured by, among others, the Program for International Student Assessment (PISA). He also disagrees with De Moura in that he considers Brazilian higher education reasonably good. "In the United States and Europe, courses are more general in the first years of college and specialization is emphasized in graduate school. In Brazil there are specialized courses in the first few years of college. We need to look at the number of students who complete college, and also improve the first few years of college for poor students so we do not waste so much talent," he says.

Leandro Tessler, professor at the University of Campinas (Unicamp), is more critical; he considers Brazilian higher education, especially graduate school, to be idiosyncratic: "The workload is excessive. We think that students only learn in the classroom, in contact with brilliant teachers, but this is not so worldwide. Elsewhere, more individual learning and independent activities are encouraged."

The productivity implications
Governments and analysts are concerned with the shortage of skilled labor in some professional areas, which affects work force productivity, particularly for engineers and physicians. A new study by the Institute for Applied Economic Research (IPEA) has concluded that physicians earn more than other professionals because Brazil has a doctor shortage. Demand for medical education is nearly five times higher than for such courses as law, engineering, nursing, and dentistry. The lack of places in medical schools raises questions about how medical schools are regulated. Initiatives such as the More Doctors Program, the government’s proposal to expand the number of vacancies in medical schools by 11,447 by 2017, and the Fies should help to rectify the situation.

IBRE researcher Fernando Veloso believes that importing skilled labor is a good idea generally as a catalyst, especially in science, technology and engineering areas, but does not think it will relieve the situation much: "This is a very limited emergency program to remedy the shortage in specific certain regions. I do not see how it solves the education problem. ".

The shortage of engineers is more complex but perhaps less widespread than might be thought. The IPEA study found a shortage in manufacturing and mineral extraction, utilities, construction, and public administration. In 2012, together they accounted for 65% of hours worked exclusively as engineers work and 42% of total hours worked in Brazil.

Demand for experienced engineers is particularly high. According to the IPEA study, those aged 35
to 54 are most sought after. That has not always been the case. Aguinaldo Maciente, one of the authors of the IPEA study, explained that, “In the past, engineering was discredited and badly remunerated, which discouraged people from studying engineering. Engineers who graduated in the 1980s and 1990s eventually migrated to other professions [such as economy and finance]. When the economy recovered, there were not enough engineering professionals available.” He added that currently most engineers are young and inexperienced, so that companies must spend more time training them.

However, because more students have been enrolling in engineering colleges since 2010, Maciente says, “By 2018 there will be more than proportional growth of professionals in areas related to science, technology, and engineering. But ... if the labor market cools down, something we have seen recently, we may again see too many engineers for the few vacancies.”

“Science Without Borders”
To simultaneously address the shortage of trained personnel and stimulate expansion of knowledge and innovation through international exchange of science and technology, the federal government in 2011 created the Science Without Borders Program. So far, 83,000 scholarships have been granted to Brazilian undergraduates and graduates to study in more than 30 other countries. In June, President Rousseff announced that starting in 2015 the second phase of the program will offer 100,000 scholarships.

But Unicamp’s Tessler has questions about what the government really expects from the program: “What was the outcome of the first phase of the program, does anyone know? We know how many scholarships were awarded, but what was the outcome? Is the program meeting its goals? What justifies continuing it?” Tessler supports sending people abroad to study, but he believes the effects of the program on the Brazilian educational system should be followed up. “I am not opposed to Science Without Borders,” he says. “It broke decades of isolation. However, there is no point sending 100,000 people abroad if our engineering courses, for example, remain the same—if graduate students come back and we do not incorporate the disciplines and the knowledge they acquire into the curriculum of engineering schools.”

“...To improve the quality of private universities it is necessary to increase competition by means of better teaching and better infrastructure for public universities. But it is also necessary to address the low quality of education in primary, middle, and high school. The student arrives at college unprepared.”

Leandro Rodrigo de Moura

Low on the Innovation Index
Today, despite the incentives in the Innovation Law for companies to carry out R&D, in the 2013 Global Innovation Index, which ranked 116 countries, Brazil it as 67th, below Paraguay, Venezuela, Uruguay, and Colombia. (The index is
produced by Cornell University in partnership with the European Institute of Business Administration and the World Intellectual Property Organization.)

One reason for the innovation gap is the distance between research institutions and business in Brazil, although that is being shortened. Insper’s Menezes points out that “We have increased the number of graduate students and the number of academic papers published by Brazilians, but the volume is still small.” He also notes that Brazilians who come back from the Science Without Borders Program end up working in research institutions rather than the private sector.” He believes academics still disapprove of universities partnering in research with companies because it involves profits. He also believes that businesses in Brazil have become used to living on government favors. “Businesses are not that excited about pursuing innovation, competitiveness, and new concepts,” he says, “and that turns them away from research institutions.”

Sérgio Queiroz, research coordinator for innovation of the Foundation for Research Support of the State of São Paulo, disagrees with Menezes—at least so far as his own state is concerned. He says, “We have

Former University of São Paulo professor Regina Scivoleto chairs the scientific committee of Cristália Lab. She is convinced that the company is pioneering innovation in the Brazilian pharmaceutical industry—something still a rarity in Brazil. Founded in 1972, Cristália Lab has since been granted 74 patents in pharmaceuticals. Dr. Ogari Pacheco, one of its founders and its current chairman, has been a the catalyst for the company’s drive for innovation. Scivoleto explains that “In the 1980s, Dr. Pacheco realized it was possible to separate the isomers of molecules [active ingredients in medicines] to enhance the beneficial effects of a drug and reduce its toxicity.”

Today, Cristália Lab has about 200 employees and invests 6% of annual revenues in research. In 2002, the company began to approach research universities, and in 2004, established a scientific committee, coordinated by Scivoleto, to evaluate the feasibility of new drug projects. Today there are 120 experiments underway, and the lab has 12 continuing R&D projects in partnership with nine research institutions.

Scivoleto describes the process: “We do a pre-contract with the researcher and draw together some experiments to confirm the expected outcomes of a project. If the preliminary experiments are fine we fund the idea.” She explains that it’s a two-way street: Universities come to the company to test a particular pharmaceutical and the company goes to universities to identify pharmaceuticals that could works in practice. “When I was teaching,” Scivoleto says, “I knew that pharmaceutical research was being carried out, but in most cases the results would be published essays, not products. So I decided to try to help bring together industry and research institutions.”
Breathing innovation

For most people, a particle accelerator that generates light beams sounds like science fiction. It is not. Such a facility—open to the public and for the use of academic and industrial entities—is the National Synchrotron Light Laboratory (LNLS), part of the National Center for Research in Energy and Materials in Campinas, São Paulo state. The synchrotron emits beams—electromagnetic radiation from infrared to X-rays—that are used in analysis of atomic and molecular structures. The lab is virtually an oasis of innovation in Brazil, where cutting-edge research is still rare.

José Roque, LNLS director, explains that the quality and viability of proposals to use the facility are evaluated by an internal committee. “In general, proposals come from researchers in academic institutions, but it is not unusual for researchers to be commissioned by companies,” he said. Research results are published, and so shared with society.

Currently, the laboratory is building Sirius, a fourth-generation synchrotron, at an estimated cost of R$650 million, to be paid by the Ministry of Science and Technology and other funding agencies. The project should pave the way to new perspectives for research in such areas as nanotechnology, biotechnology, physics, and environmental sciences. It is expected to become operative in 2018.

Roque believes that the relationship between research institutions and companies has improved, but he warns, “Keep in mind economic conditions in this country. To compete internationally, it is not enough to have an innovative product. The ‘Brazil’ cost weighs in company decisions about exporting the product.”
It was not a specific day of the week or the month, but it was a few years ago when people started to realize that water is a natural resource that could come to an end. From then on, governments, individuals, and public and private organizations have seen the yellow warning light on and the world has started to move towards solutions. Thinking about solutions on a large scale, here in Brazil OAS Investimentos has created OAS Soluções Ambientais, a company that creates efficient and sustainable solutions for supplying systems, collection, treatment, water distribution, and environmental management of industrial waste. OAS Soluções Ambientais holds and takes advantage of the experience OAS has acquired by rendering of services to the main national and international operators that consider the company to be one of the biggest private operators in the sector. Two main divisions of the company are already working at their full activity: SAMAR which holds the water charter service and saddle of Araçatuba city (São Paulo), with 188,000 inhabitants, and Epasa, concessionaire that annually provides about 50 million cubit meters of water to serve more than 8 million users in Lima, capital of Peru. The planet keeps asking for water and solutions for the environment. Everyone wants a better quality of life. And OAS Soluções Ambientais knows how to help them achieve that.
The impact of one of the worst droughts ever recorded on the sustainability of the energy sector was a priority for discussion at the IV Seminar on Matrix and Brazilian Energy Security sponsored by the Brazilian Institute of Economics on June 2, in Rio de Janeiro.

**Solange Monteiro**

**DESPITE NEARLY A DECADE of electricity reforms, early 2014 marked another difficult year for Brazil, with severe droughts threatening a rationing of power and underscoring the need for further adjustments.**

Speaker Mauricio Tolmasquim, president of the Energy Research Company, pointed out that since 2001 the energy sector has increased generation faster than demand has grown. It has also diversified the sources of power generation, and expanded the network of transmission lines across regions. “While from 1996 through 2001 power consumption grew 7% more than generation, from 2001 to 2014 generation increased 43% more than consumption; and twice as many transmission lines were installed than in 2001. Even considering the worst drought recorded since 1953, there is still a balance between supply and demand for power,” he said.

Hermes Chipp, general director of the National Operator of the Electric System, pointed out that from 2014 to 2018 power generation is expected to expand at 4.2% a year, ensuring that the industry will stay ahead of demand. Tolmasquim added that the expected growth in generation also keeps the sector attractive to investors. “For the next auction for power plants, in September, we have a record number of 1,041 projects registered, with total generation capacity of 51 GW,” he said. Generating that much more would increase installed capacity by 50%.

Márcio Zimmermann, executive secretary of the Ministry of Mines and Energy, emphasized that Brazil’s per capita energy consumption is still low compared to Europe and the US, making it all the more important to plan to produce more power. Noting the limitations of hydropower expansion, he said that “Developed countries are in no hurry, because they have no demand pressure. But Brazil has to do everything at the same time in order not to have imbalances between power consumption and production under more strict environmental regulations.”

**The price issue**

But panelists noted that the cost of eliminating risks to power supply is high and affects not only producers but also industries that depend on energy for their production. Distributors of electricity have had to buy more expensive power from thermoelectric plants. Though their losses were partially mitigated by billions in loans from the Treasury, and an auction of energy, “There are still about US$5 billion in losses and no one knows where that money will come from,” said Luiz Fernando Leone Vianna, president of the Brazilian Association of Independent Power Producers.
The current of power generators is also serious. “We estimate that [power producers] will need US$5.7 billion to $10.4 billion to fulfill short-term contracts to supply energy,” Vianna said. “In 2015 and 2016, then, consumers of electricity will have to pay for the increased costs.”

Current discussions of the electricity sector have focused on how to resolve the Settlement Price Differences (PLD) used to value energy traded in the spot market, which has historically been volatile in Brazil. “In markets like Europe, where thermoelectric power predominates, prices are less volatile. The variation that exists in Brazil makes planning and decision making much more difficult,” said Manuel Herrera, director of trading and marketing of Endesa Brazil. Otavio Rezende, director of Votorantim Energy, said that the Brazilian policy of selling electric energy at a very low price when the flow of water is good stimulates this oscillation, which shot up from US$8 per megawatt-hour to US$357 this year with the drought. “We have never had such a high PLD for so long,” he said.

Yet some seminar participants were critical of proposals to change the PLD. “Current suggestions about changing calculation of the PLD because of the circumstances have contaminated the market and generated speculation. … The market is tired,” said Paulo Mayon, co-chair of Compass. For him, one solution would be to create an instrument between the free and regulated market that does not depend on the auction calendar to balance demand. He also encouraged the entry of financial institutions that could offer, as with other commodities, futures contracts to protect against fluctuations in electricity prices. APINE’s Vianna believes that dialogue between government and electricity companies is of paramount importance to ensure that rules are implemented consistently.

Dario Albaglii, Alcoa director of energy, emphasized the importance of electricity rates to industry competitiveness. He noted that a study of the Federation of Industries of the State of Rio de Janeiro ranks Brazil 18th in terms of cheap electricity rates for industry. “Argentina, China, and the United States—our major trading partners—all have cheaper rates than us,” he said. He believes Brazil needs a more effective energy policy, citing international examples: “In France, there is a law that allocates 25% of the production of nuclear power plants, which have already amortized the initial investment, to industry at lower rates.”

Votorantim’s Rezende stressed that for industries like steel, where energy is more than 30% of the cost of production, a sustainable free market and self-generation of electricity are essential. He said, “The free market is going through a delicate transitional phase. By definition, the free market exists only if it offers cheaper power than the captive market. The current price in the free market does not make sense for some industries.” Vianna commented that the free market in energy should expand in the second half of 2014, when new regulations will allow companies with less than a 500 KW load to buy there. “Today, the free market represents 27% of total,” he estimated, “but it could reach 47%.”

**More thermoelectric power**

It was generally agreed that with limited opportunities to expand hydroelectric power and increase generation of irregular renewable sources like wind, Brazil will have to generate more

---

**From 2014 to 2018 power generation is expected to expand at 4.2% a year, ensuring that the industry will stay ahead of demand.**

---

(SEMINAR)
Oil prospects sunny, but not totally cloudless

Maria das Graças Foster, president of state-owned oil company Petrobras, emphasized that in May, deep sea oil “accounted for 22% of all oil produced by Petrobras.” She also announced that 85% of the investments the company plans for 2014–20 have already been contracted for, and the company estimates that by 2020 total Petrobras production will reach 4.2 million barrels a day, and Brazil’s total production will be 5 million barrels a day. Independent forecasters recognize the potential of Brazilian reserves, she said, noting that “the International Energy Agency predicts that by 2035 Brazil will be the sixth-largest oil producer in the world, responsible for 6% of world production.”

Helder Queiroz Pinto, director of the National Petroleum Agency, highlighted that “the economic problems that led to the drop in Brazil’s oil production in 2012–13 were solved and this year the country will become a net exporter of oil again.”

He assured his listeners that the bidding rounds for oil blocks initiated in 2013, after five years without auctions will continue. Experts pointed out the importance of these auctions, which affect planning and the development of the industry. Julio Bueno, Secretary of Economic Development, Energy, Industry and Services of Rio de Janeiro state, called the risks to Petrobras, which holds 30% of all deep sea oil fields, “worrying,” because they affect the indebtedness of the company, “especially considering the policy of controlling fuel prices.”

Armando Guedes Coelho, chairman of the Energy Council of the Federation of Industries of the State of Rio de Janeiro, emphasized the strategic importance of the deep sea oil and the need to ensure an attractive investment environment. That opinion was shared by André Jacques de Paiva Leite, president of Statoil Brazil, who warned, “The oil and gas industry is experiencing a major challenge. Profit margins have declined because of increased costs, making it less attractive to investors in terms of return.”

And Carlos de Luca, president of the Brazilian Petroleum Institute, sounded another warning: “As spectacular as deep sea oil is, investors also check out other alternatives, such as the opening of the Mexican market.”

The oil industry still has a lot to explore, and Brazil will need partners to do so. “We have 7.5 million square kilometers of sedimentary basins, but are familiar with no more than 1.5 million square kilometers,” Bueno said. “We need a program that helps us to better understand our oil potential.”

Seminar participants also discussed the regulations that require energy companies to buy goods and services locally. “It makes sense to have a Brazilian oil industry, but we need to change the logic. We need industries participating in the global value chain, integrated with the international market,” Bueno said. De Luca raised a question of how well local industry could cope with increased demand: “Investment in the oil sector has grown by eight to ten times in recent years, and some companies have even doubled in size. We need a proposal to generate investment to increase the capacity of local manufacturers to serve them.”

Foster argued that the local content rule is not that much of a problem. “Those of us in the oil sector know the exceptional advantage of having a shipyard nearby,” she said as an example. However, she did emphasize the importance of investing in productivity, training, and partnerships with foreign holders of technologies to build domestic industry.
thermoelectricity. Othon Luiz Pinheiro da Silva, president of Electronuclear, said, “We need to think about two Brazils: the agricultural hinterland that can use sources of low-intensity energy, and big city businesses that need large amounts of energy generated by nuclear, hydro, and thermal energy.” He cited Brazil’s large uranium reserves and the complete knowledge of uranium processing it has acquired since 2010. “Nuclear generation of electricity costs US$64 per MW; sources of thermoelectricity cost US$117 per MW,” he said.

Participants also recommended encouraging expansion of renewable energies. Carlos Mathias Becker Neto, president of Renova Energy, noted that in 2014 2.5 GW of wind-generated electric power could not be distributed due to a lack of transmission lines. Marcos Freitas, professor of the Energy Planning Program at the Alberto Luiz Coimbra Institute of Graduate Studies and Research in Engineering, said that a major challenge for renewable energies is boosting local research and development, especially in view of the local purchase regulations: “At present, there is no robust national technological development; there is only domestic production.” Becker Neto added that, even so, Brazil is the third largest consumer of wind power equipment in the world.

As for sugarcane biomass, Milas Evangelista de Souza, director of ethanol for Petrobras Biofuel, said that “the impact of the economic crisis and unattractive [controlled] ethanol prices have reduced the competitiveness of ethanol compared to other fuels.” He noted that the sector is projecting only a very modest increase in production. Coppe’s Freitas also criticized the lack of incentives for the ethanol market: “Our production of ethanol was once the largest in the world. It has now fallen to second place with many business difficulties. We need to take another look at policy for this sector.”

---

**Brazil’s per capita energy consumption is still low compared to Europe and the US, making it all the more important to plan for power expansion.**

---

**Seminar participants**

During the seminar, FGV was represented by its president, Carlos Ivan Simonsen Leal; vice presidents Sergio Franklin Quintella and Francisco Oswaldo Neves Dornelles; counselor Lindolpho de Carvalho Dias; FGV Energy’s executive director, Carlos Otavio Quintella; the director of FGV/IBRE, Luiz Guilherme Schymura; FGV’s international director, Bia Cavalcanti; strategic planning and innovation director, João Paulo Villela; director of operations Mario Rocha Souza; director of the Institute of Educational Development Rubens Mário Wachholz; director of public policy analysis Marco Aurélio Ruediger; vice director of public policy analysis Rogério Sobreira; IBRE researcher Maurício Canêdo; and IBRE superintendent of communication and dissemination Claudio Roberto Conceição.

Besides Maria das Graças Foster, Márcio Zimmerman, Maurício Tolmasquim, and Hermes Chipp, also in attendance, among others, were the director of the National Agency of Petroleum, Natural Gas and Biofuels, Helder Queiroz Pinto; the CEO of Votorantim Energia, Otávio Rezende; the president of the Brazilian Institute of Oil, Gas and Biofuels, who is also a member of the FGV Business Cooperation Committee, João Carlos de Luca; the president of Statoil Brazil, André Jacques de Paiva Leite; the Secretary of State for Economic Development, Energy, Industry and Services of Rio de Janeiro, Júlio Bueno; the president of the Energy Council of the Firjan System, Armando Guedes Coelho; the president of Eletronuclear, Othon Luiz Pinheiro da Silva; the director of ethanol for Petrobras Biofuels, Milas Evangelista de Sousa.

The 4th Seminar on the Brazilian Energy Matrix and Security was sponsored by Senai, Statoil, Chevron, Tractebel Energia, and Votorantim Energia and had institutional support from Compactor.
Souza Cruz and the farmers it works with care for the tobacco in a special way - paying extra attention to every detail makes the difference to the final product. Over the last 111 years Souza Cruz has built a legacy based on pioneering initiatives, such as the Integrated System, that have enabled sustainable development in growing areas. Everything is done in order to offer a superior quality with global recognition. This is why for over a century, each crop has been treated like a work of art.
OF ALL INFRASTRUCTURE SECTORS in Brazil, sanitation is the most critical. Poor sanitation has meant uncountable financial losses because water networks are inefficient; it also means a much lower quality of life for Brazilians exposed to the diseases that result from untreated sewage. Strategies to reverse this situation were discussed May 29th at a seminar on “Sanitation and Water Management” sponsored by the Brazilian Institute of Economics (IBRE) of Getulio Vargas Foundation (FGV), in São Paulo city.

Speakers at the seminar analyzed developments in the sanitation sector since the Sanitation Law of 2007 and the launch of the Sanitation Plan (PLANSAB) in late 2013. Ernani Ciríaco de Miranda, director of institutional coordination of the National Sanitation Department of the Ministry of Cities, noted the importance of these milestones for promoting investment in the sector after the previous National Sanitation Plan (Planasa) was dismantled in 1986. “PLANSAB now effectively unifies the discussion of sanitation policies, influencing programs, activities, and guidelines,” he said. PLANSAB’s goal is to achieve universal access to sanitation services by 2033. It is estimated this will require investment of US$140 billion.

Carlos Alberto Rosito, of GO Associates consultants, considered the goal ambitious, because it implies increasing by about 50% the annual amount currently invested in sanitation. The experts were unanimous in saying, however, that the obstacles to meeting the goal are not just financial; a major problem is inability to execute these investments. A study of the Trata Brazil Institute found, for example, that of 149 sewage-related public works of the Growth Acceleration Program (PAC), more than half are not proceeding; they have been paralyzed or delayed or were never
even initiated. Based on the 2007 Sanitation Law, local authorities have until the end of 2015 to submit master plans that have been adopted by law or municipal ordinance. So far, however, only about 30% of cities have plans, and the quality of those plans submitted is quite uneven. “We have seen plans five pages long and others fully developed,” Miranda said.

Another challenge for the expansion of sanitation is the how municipalities should address its regulation. Vinicius Benevides, president of the Brazilian Association of Regulatory Agencies, noted that here sanitation activity suffers from problems common to other sectors that relate to the need to build up regulatory agencies. “Regulatory agencies are still young in Brazil,” he said, “and have suffered some setbacks in their operations. For sanitation, however, the priority now is to strive for rationality and making reporting information simpler,” he said. “The private sector has proven it can contribute, as it did in sectors like power and roads,” said Louzival Mascarenhas Jr., president of OAS Environmental Solutions, but better regulation has been identified as critical to attract the private sector to expand sanitation services through such options as public-private partnerships and concessions.

**Question of focus**

Marilene Ramos, professor at Brazilian School of Public and Business Administration and former president of the State Environmental Institute of Rio de Janeiro, emphasized that the need to enhance planning capacity in the sector is directly connected to the safety of the water supply. She illustrated the current lack of planning by citing the crisis in the metropolitan region of São Paulo city because of the low levels in the Cantareira water system, and the decision of the Federal Attorney’s Office to stop the public works to transfer water from Paraíba do Sul River to the Cantareira system. She said that actions like this suggest a failure to focus when dealing with current water supply problems. “If the project included targets for sanitation and reduction of water losses, there would be sufficient water for everybody,” she said, pointing out that the current system of charging for the use of water has been moving slowly, and collections are still too small to pay for sustainable management of river basins. She added, “US$18 million a year collected is not sufficient to meet the investment needs of the Paraíba do Sul River basin.”

Fernando Malta, coordinator of the Chamber for Water Resources of the Brazilian Business Council for Sustainable Development, noted that although Brazil has some of the most advanced laws in the world for water management, their enforcement and operation are not effective: “Today, Brazil has 200 state and federal watershed committees, but fewer than 30 are fully functional,” he said. The inaction of committees can affect the water supply of some industries, and various companies have started to make efforts to improve water management.

“Working to reduce the loss of water supply requires the participation of everyone,” said Giuliano Dragoni, president of the National Association of Private Concessionaires of Public Water and Wastewater. He noted that a study by the National Water Agency found that about 55% of municipalities could have water supply problems
by 2015 because of a shortage of water sources or deficiencies in their water systems.

The importance of water sources, which captured newspaper headlines because of the water supply crisis in São Paulo city, the largest in Brazil, is expected to gain even more prominence in coming years, according to Newton Azevedo, Brazil’s representative at the World Water Council. “In 2018, Brazil will host the World Water Forum, which will attract 50,000 people to Brasilia. It will be an important moment because there are issues not only of the impact of climate change but also of health and water supply security,” he said.

**Innovation**

To increase access to sanitation services, the experts underscored the importance of incentives for adopting technologies to reduce water losses and allow water reuse though careful treatment of wastewater.

Ruddi de Souza, CEO of Veolia Water Technologies, said that the private sector has invested heavily in innovative water management techniques and noted that “Petrobras, for example, has adopted new technologies. Its new plants can reuse 35% to 40% of the water consumed,” he said. Marco Aurélio Silva, director of research and development of Aegea Sanitation, cited gains recorded in one of its utilities, Águas Guariroba, which serves Campo Grand, capital of Mato Grosso do Sul state. “More efficient equipment has allowed us to reduce losses so that production of water increased by 20% and power consumption dropped by 40%,” he said.

Sanderson Leitão, general coordinator of meteorology, climatology and hydrometeorology of the Ministry of Science, Technology and Innovation (MCTI), stressed the importance of making science, technology, and innovation an integral part of sustainable development in the sanitation sector. “Monitoring, management, and research should be the trio that guide the sanitation sector, encourage rational use and reuse of water, influence the legal and institutional framework, and encourage the urbanization of municipalities,” he said. Leitão lauded the establishment in February of the National Institute for Water under the MCTI, which will carry out research to generate knowledge and technologies for water management.

Several participants identified obstacles that still hinder adoption of new technologies in the sanitation sector. Valdir Folgosi, president of the National Union of Manufacturers of Sanitation and Environmental Equipment, cited Public Law 8,666, which governs procurement by public agencies and noted that “Currently, we have technology available to meet the needs of the entire water production chain, from uptake of water to its treatment. But it is difficult to sell technology in Brazil because the public procurement law encourages purchasing at the lowest price,” he said. The experts were unanimous in advocating elimination of this obstacle. “It is not enough to talk about investments. We need to focus on water conservation and reuse,” said Ivanildo Hespanhol, director of the International Reference Centre for Water Reuse, University of São Paulo. He added that “We have laws that inhibit water reuse, but encouraging water conservation and reuse will be an inexorable movement in the next decade.”

Better regulation has been identified as critical to attract the private sector to expand sanitation services through such options as public-private partnerships and concessions.
In 2010, **AEGEA** was created to provide water supply and sewage collection and treatment.

Within three years, its share in the private sanitation market reached **16%**.

**AEGEA** is present in **33 municipalities** in **6 states**.

**AEGEA** serves **3.6 million people**.

Net revenue grew **26%** in 2013.

Rated **A+ (bra)** by Fitch Ratings.
FORECASTS OF SLOWING GROWTH and persistent high inflation have raised concerns that add force to the view that in 2015 the new government will have to make adjustments to the economy. What few seem to realize is that the adjustments may have already begun, and gradual changes may save the country from any abrupt shocks. These were the opinions that emerged from a June round table sponsored by the Brazilian Institute of Economics (IBRE). Samuel Pessôa, IBRE research associate, stressed that Brazil’s economic problems today are related less to the external outlook than to domestic policy.

Externally, financial markets believe that the US will take longer than expected to taper off its expansionary monetary policy. José Júlio Senna, head of IBRE’s Center for Monetary Studies, believes that US growth will be lower from now on. He noted that the Federal Reserve Bank pointed out in its March-April statement that when everything returns to normal, the interest rate will still stay low. He explained that to the extent that households and companies realize that the growth potential of the economy is lower, they will invest less, consume less, and so demand lower interest rates.

That would be good news for Brazil. Low US growth and interest rates will make external financing more favorable for Brazil, allowing its domestic economy to adjust gradually. “It’s hard to say whether a gradual adjustment of the economy would be better than a shock treatment; but in any event the political process itself is leading to a gradual adjustment,” Pessôa said.

Inflation worries
IBRE researcher Nelson Barbosa believes that the slowing of growth and credit, higher interest rates, and adjustment of some controlled prices this year are signs that the economy is already making a partial adjustment in 2014. “The more that is done this year, the less we will have to do next year,” he said. The IBRE forecast is that controlled prices will rise 5.8% in 2014 compared with 1.5% in 2013.

Salomão Quadros, IBRE’s Deputy Superintendent of Price Indexes, pointed out that rises in controlled prices have been mainly driven by energy prices. He warned that adjustment of controlled prices should be accompanied by tight fiscal and monetary policies to prevent spillover effects on inflation. For 2014, IBRE estimates that the official price
The Brazilian Economy

The Brazilian economy is facing significant challenges, with the consumer price index (IPCA) expected to rise 6.7%, above the government’s inflation target ceiling of 6.5%. “We expect inflation will breach the target as early as July, and only from October on will it decline,” he said. The main concern remains the persistence of inflation in services prices, which are not very sensitive to conventional monetary policy measures.

Despite the forecast of low growth and high inflation for 2015, Barbosa believes Brazil could reap a quick response from the markets so that growth would resume in 2016, if the government repeats the performance observed in 2002-03, when inflation reached 12.5% and the new government tightened fiscal and monetary policies. “The big difference now compared to 2002-03 and 1998/99,” he said, “is the labor market. In the previous two episodes, unemployment was high and the adjustment of prices was not amplified by the labor market. Today, the labor market is tight and adjustment of prices may encourage more persistent inflation.”

Regis Bonelli, coordinator of the IBRE Macroeconomic Forecast, stressed that labor surveys by the government statistics agency IBGE indicate a continuing dynamic labor market though with some signs of employment slowing in metropolitan areas. He added, “We do not expect that wages will slow down with such a positive labor market.”

Pending tasks

If on some fronts the Brazilian economy is beginning to adjust, IBRE economists warned about the absence of effective measures to deal with the exchange rate and fiscal policy. “In the case of exchange rates, we see an unstable equilibrium,” Barbosa said. “The Central Bank’s higher policy interest rate and intervention in the forex market are good for inflation, but they undermine recovery in the balance of payments and improvement in external competitiveness.”

Pessôa believes that inattention to the external adjustment of the economy could jeopardize efforts to renew economic activity: “When we consider the real exchange rate and the current account deficit as well as wages, nothing has changed. In 1998–2004 we made a brutal internal adjustment [to balance the external account], which evidently we are not considering now.” He added that “with the more favorable external financing outlook, adjustment of the exchange rate should be slower.” The question that remains is the extent to which resumption of economic activity will depend on a firmer external adjustment and improved competitiveness and productivity. In the absence of corrections, he pointed out the

| IBRE projections for the Brazilian economy (% growth) |
|-----------|-----------|-----------|
| Supply    | 2013      | 2014      |
| GDP       | 2.5       | 1.6       |
| Agriculture | 7.0       | 3.5       |
| Industry  | 1.7       | -0.1      |
| Mining    | -2.2      | 1.4       |
| Transformation | 2.7       | -0.5      |
| Construction | 1.6       | -1.3      |
| Energy    | 2.9       | 2.9       |
| Services  | 2.2       | 1.8       |
| Demand    | 2.6       | 1.7       |
| Private consumption | 2.6       | 1.7       |
| Government consumption | 2.0       | 2.5       |
| Gross investment | 5.2       | -2.0      |
| Exports   | 2.5       | 0.2       |
| Imports   | 8.3       | -1.3      |

Source: IBRE.
The Brazilian Economy

The economy would continue to be dependent on services, which in general are less productive.

Lia Valls Pereira, coordinator of IBRE foreign trade studies, pointed out that reducing the trade deficit in crude oil and fuel will not be sufficient to turn around the trade deficit as a whole. “We need to improve the exports of other products,” she said, noting the unlikelihood of a recovery in the price of iron ore, the drop in product exports to China, and the failure of manufacturing exports to recover. “We estimate a trade balance deficit of about US$2 billion in 2014—3.6% of GDP,” she said.

Regarding fiscal policy, the IBRE economists pointed out that the fiscal outlook is worsening. When the government announces the postponement of public expenditures, it creates uncertainties about how much will actually be spent and the government’s ability to meet the 2014 primary fiscal balance surplus target of 1.9% of GDP. IBRE researcher Gabriel Leal de Barros estimates that the 2014 primary fiscal balance surplus will be 1.7% of GDP, thanks to extraordinary revenues such as those revenues that came in from granting concessions and oil bonuses for exploration of deep sea oil. He explained that dependence on extraordinary revenues makes meeting the primary surplus target uncertain, and cuts in public spending are necessary to meet fiscal targets.

Shock of credibility

Barbosa believes there is consensus on the need to reduce inflation and the need for the government to achieve surpluses in the primary fiscal balance without resorting to extraordinary revenues. “We need predictability more than fast results,” he said, pointing to the importance of reversing the lack of confidence of both markets and consumers. Aloisio Campelo, coordinator of IBRE Confidence Surveys, reported that the May surveys found expectations worsening in the construction sector and confidence falling in the services sector. Surveys also found consumers entering into the World Cup activities with caution.

IBRE economists announced an estimate of 1.6% in GDP growth in 2014—above the market expectations of 1.4% reported in the Central Bank’s Focus survey (June 6). Silvia Matos, coordinator of the IBRE Economic Outlook, noted that this scenario assumes a relatively positive outcome for industry. After the World Cup, factors that could influence growth are oil production that is lower than expected and how the presidential election plays out.

Even with the possibility that the economy is already making some gradual adjustments, the IBRE economists agreed that Brazil needs a positive credibility shock. As Barbosa summed it up: “The difficulties this year and next can be overcome by improving expectations. That can be done by announcing a credible policy strategy, demonstrating how government debt will decline in the medium term. ...Having more policy predictability means that even if the condition of the economy is adverse, private investments can resume in 2015.”
The US Supreme Court ruling on Argentina’s payment of creditors has produced international support for but also criticism of Argentina. What is your opinion?

Roberto Lavagna

— We need to put the ruling in the context of the enormous influence that certain financial sectors have on the rules that move world finances. As a consequence of deregulation in the 1980s and 1990s, we ended up in a huge global crisis in 2008. After deregulation, we thought new rules were necessary, but the financial sector managed to delay some, weaken some, and...
to some extent nullify them. In the current case the influence of the financial sector was able to use courts to change the criterion of equal treatment for all creditors. The new interpretation now is that some creditors can be treated differently. Thus, it gives the 2% of lenders who are litigating against Argentina a position of privilege at the expense of the more than 90% that renegotiated their claims. The governments of countries like the USA, France, Brazil, and the Group of 77—and even The Financial Times, a spokesman for international finance—consider this decision excessive.

This is not to ignore the fact that for years the Argentine government has neglected its debt problems. Indeed, changes in economic policy since 2007 have put these issues aside, which was a mistake. But such domestic error has to be put in the more worrying context of international finance today. The International Monetary Fund has also expressed concern about how to interpret the changes, and it is clear that the international financial system needs additional reforms. The negative impact of this decision is obvious, Christine Lagarde, managing director of the International Monetary Fund, has made it very clear that sovereign debt restructurings will become more complex if this interpretation holds.

Do you think Argentina was correct to focus on deficit reduction without seeking the help of the international financial system?

Here my opinion is straightforward: The debt renegotiation proposal negotiated in 2005 said clearly that the estimated 75% reduction in the debt assumed that Argentina would not seek funding in international markets until December 31, 2014—10 years from the agreement. Of course, this policy decision did not please bankers, who could have lent to Argentina and even today are offering credit. The decision was made so that Argentina would not enter into another borrowing binge. Our position was to go to the markets only to manage our debt: If US$1 billion in debt matured, we would issue US$1 billion in debt; and if we had debt with a 5-year maturity and we could change it to a 10-year maturity, we would do it. The goal was to achieve a debt-to-GDP ratio of 30%.

Debt management had caused much trouble for Argentina in the past, and opting for an easy borrowing policy was out of the question. On the other hand, at that time Argentina had fiscal surplus of 4.5 points—a mass of available resources.

How may the economic imbalances have affected how creditors assessed the health of the Argentine economy?

I’m critical of macroeconomic policy since 2007. There have been serious macroeconomic errors, and they primarily relate to domestic issues—not to international creditors but to our own situation. Since the crisis of 2001 there have been three very different periods: From mid-2002 to 2006, the country grew 9% per year, with a primary fiscal surplus of 4.5% of GDP.
GDP, an external current account balance of 3.5% of GDP, and annual inflation of 9% to 11%. Then there were economic policy changes in 2007. In the second period, from 2007 to 2011, growth was cut in half, to 4.5%, and in the third, from 2012 to 2014, growth sank to about 1%, annual inflation shot up to between 35% and 38%, the fiscal deficit rose to 3% of GDP, and the precarious external current account balance was dealt with only by the imposition of exchange controls in 2011.

The results are obvious to anyone. It is clear that there have been changes, they have been negative, and they may have affected not only creditors but also the Argentine population. I say “may” because since 2005 the country has fulfilled its debt obligations. I believe that, like Brazil, we will be making a big mistake if we blame the international context [for our problems]. Close to us, countries like Uruguay, Peru, Chile, and Colombia live in the same world but are in better condition. We need to acknowledge that there are local problems in how economic policy is being managed. It would be too easy to blame the world outside.

What advice would you give to the next economy minister?
Here it is best to talk about the facts. From mid-2002 to early 2006, economic and social policy produced real results. Of course everything has to be adapted to the context of the moment, but I think there are guidelines for how to manage macroeconomic policy. When I left the ministry two important measures had been submitted to Congress but were abandoned. One was a major tax cut. The other was creation of a countercyclical fund. At that time Argentina was running a fiscal surplus of 4.5% of GDP, so it would have been possible to build a reserve fund for when the times became less favorable. Chile established a countercyclical fund in 2007, and in a few years the fund totaled over US$20 billion. In Argentina, the tax cut did not occur, and taxes have surged since 2007, affecting the private sector, especially small and medium businesses, which are less able to cope with it. Economic growth has declined. In the current situation in Argentina, it would be interesting to think about a tax cut in order to spur investment and create jobs, and about creating a countercyclical fund.

How do you think the country will be affected by the presidential election in 2015?
How will the transition work? It’s hard to say. My feeling is that inflation will continue to be high—we will not be able to reduce inflation by more than 1.8–2% monthly—investment will be low, and very few jobs will be created. This situation is complicated because Argentina’s main trading partner is Brazil, where growth has been low for several years. It seems that what awaits us is no large open crisis, but continuing low growth. We have improved official price indices to some
extent, but there are still important differences between private and government estimates. This means that as yet there is no credibility to encourage private sector activity.

**What alternatives does the country have to attract foreign exchange, besides exports and reducing controls on imports?**

Currently Argentina’s number one task is to avoid capital flight. Due to distrust of economic policies, manipulation of price indexes, and low economic growth, there is flight, and not just of foreign capital. Of course it is good to attract foreign investment, but the country cannot do so without giving assurances to its own people.

**What should Argentina do to become more active in global value chains?**

This is a challenge not just for Argentina but for all South American countries. In our case, however, it is more difficult because we have no private investment and job creation. What Brazil and Argentina have in common today is that their industry is not competitive internationally. No need to explain the situation in Brazil, where exports are dominated by primary commodities. Here we have a point in common—we reached it in different ways, but the situation is the same.

Do you agree that the Mercosur customs union is bankrupt and that it is necessary to reestablish the bloc as a free trade area?

I do not think that is the way to go. Mercosur has to address many things; it has to negotiate trade agreements with countries of both the Pacific Alliance and the European Union. To do this, however, Brazil and Argentina have to address their own lack of competitiveness—it is not sufficient to support negotiation in other areas. Both countries have to make domestic adjustments.

**How could Brazil and Argentina help each other to do this?**

Argentina’s growth potential is huge. So is Brazil’s. I have no doubt that both countries will continue to have the great advantage of international demand and prices for their products, especially soy, which will last for some time. Both have important potential: deep sea oil for Brazil, and Vaca Muerta, one of the world’s largest reserves of unconventional hydrocarbons, for Argentina. This is a formidable base. It is a great starting point to build an industrial, technological, globally competitive industry. We just have to find our way. We are limiting ourselves by rising interest rates in Brazil or imposing policy controls as Argentina has done.
For over 70 years, SENAI works as a strategic partner of the state of Rio de Janeiro’s industry, providing professional education, consulting and customized solutions with Welding, Environmental, Automation and Simulation excellence. Moreover, SENAI is part of Sistema FIRJAN, which defends interests and represents Rio de Janeiro State industry in the main discussion forums. With SENAI, your company grows and becomes even more competitive.

Learn more: www.firjan.org.br/oilandgas

Schedule a visit to one of our units: oil.gas@firjan.org.br
ROUSSEFF’S ECONOMIC POLICY is showing clear signs of fatigue. It has failed either to support vigorous growth or control inflation. Similarly, industrial policy in all its aspects has failed to stimulate industry: Manufacturing production is expected to fall again this year and will be only partially offset by other sectors. Taking into account the latest industrial production data and the poor performance of construction, we estimate that GDP growth in the second quarter was only 0.1% to 0.3% quarter-on-quarter.

The outcomes of the administration’s monetary policy have hardly been remarkable, either. Despite weak growth, inflation is bumping up against the ceiling of the central bank annual inflation target (2.5–6.5%), and continuing price controls on fuels and other utility prices are building pent-up inflation dangerously. Since May 2012, median expected household inflation has risen from 6.3% to 7.4%, according to IBRE consumer inflation expectations.

The administration is also having difficulties meeting its fiscal primary surplus target of 1.9% of GDP, even taking into account extraordinary revenues. Weak growth and generous tax exemptions have depressed tax revenues, and current transfers and expenditures have yet to be checked. Most importantly, numerous accounting gimmicks and off-budget expenditures, such as large transfers to the National Development Bank to subsidize loans, have deeply undermined the credibility of Brazil’s fiscal accounts.

Because of the current stagflation, the confidence of both consumers and businesses has plummeted this year to levels not seen since 2009, when the country was just beginning to emerge from the international crisis. This has lowered both household consumption and private investment.

As the current administration tries to muddle its way through the October presidential elections, the perception is consolidating that the next administration will have to change the approach to economic policy very quickly. What remains to be seen is whether that administration will have the political support to carry out the difficult adjustment of the Brazilian economy immediately or will have to opt for a more gradual approach. Either way, its most difficult task will be to make economic policy credible enough to attract the private investment the economy needs if it is to revive. We can only hope that the president elected, whoever it is, has learned from the experience of last four years.

**Consumer and business confidence drops to levels last seen in 2009.**

(Quarterly seasonally adjusted data)
Achieving the impossible. Since 1972

Statoil is an international energy company with operations in more than 30 countries. Building on 40 years of experience from oil and gas production on the Norwegian continental shelf, we are committed to accommodating the world’s energy needs in a responsible manner, applying technology and creating innovative business solutions. In Brazil since 2001, Statoil operates the Peregrino field in the Campos basin and has 12 exploration areas in the Campos, Jequitinhonha and Espírito Santo basins. Learn more at statoil.com.br

Statoil. The Power of Possible.