MEXICO CITY — Mexico’s Congress approved on Tuesday a sweeping overhaul of the energy industry that cleared the way for international giants to tap Mexico’s rich reserves of oil and gas.

The new legislation is the centerpiece of President Enrique Peña Nieto’s plan to jump-start economic growth by allowing competition in one of Mexico’s most stagnant sectors.

After weeks of debate, legislators approved most of the rules governing changes made last year to the Constitution that ended 75 years of state control over the energy industry.

Mr. Peña Nieto’s government hopes that the entry of international energy giants will lift sagging oil output, exploit untapped reserves of natural gas, lead to new refineries being built and result in cheaper power for Mexico’s factories.

The overhaul also aims to remake Mexico’s two sclerotic state energy companies, the oil monopoly Pemex and the Federal Electricity Commission.

In a glimpse of the surgery necessary for Pemex to compete against or ally with international oil companies, legislators agreed that the government would absorb part of the oil worker union’s unfunded pension liabilities, estimated at about 10 percent of the country’s national output. In return, Pemex will have to renegotiate the pension provision of its contract with the union and submit to an audit of its pension payments.

Mexico’s senate passed the bulk of the legislation Tuesday and is expected to finish approval Wednesday. The lower house approved the legislation over the weekend.

Mr. Peña Nieto took office at the end of 2012 promising to unclog the bottlenecks that experts agree have held back Mexico’s growth over the past two decades. Congress quickly approved an overhaul of the education system and a raft of measures intended to improve business competition, particularly in telecommunications, where Mexicans pay high prices for shoddy service.

But the stakes are highest for the energy sector. Mr. Peña Nieto has sold his reform to a skeptical public by promising that it will create as many as two million new jobs and attract billions of dollars in investment. The question is whether those ambitious forecasts can be met.
Jorge R. Piñon, an oil expert at the University of Texas at Austin, said all the pieces were in place for the reform to deliver on its promises over the long term, although it would take time.

“The political commitment from Mexico is there,” Mr. Piñon said. “The economic and business interest from international oil companies is there. On top of that, there is a need for Mexico to increase production. There is a need for Pemex to grow as a truly independent oil company. So how can it not move forward?”

Critics on the left argue that Mexico is handing over part of its oil wealth to private companies. Past privatizations in Mexico have failed to deliver benefits to consumers, instead generating suspicions of cronyism and corruption.

In the oil industry, where Mexico is one of the top three suppliers to the United States, the government expects that foreign companies will be able to raise the output of crude. Pemex’s production has dropped to about two and a half million barrels a day, down about a million a day from its peak production a decade ago.

The government will announce in September which fields Pemex will continue to work, and then next year hold the first auction of blocs for private oil exploration and production. Investors will be watching the results closely to see how effective the overhaul will be in practice.

The technocrats at the energy ministry have modest ambitions at first, saying they expect to increase output to about three million barrels a day by 2018. Over the longer term, Mexico’s government hopes that private investment in developing oil reserves deep under the Gulf of Mexico and shale oil in northern Mexico will raise output even further.

Mexico also has rich reserves of natural gas that have not been exploited. Officials say they expect that outside investment will provide cheap gas to local companies and power plants, helping to bring down fuel costs for industry.

New laws to create a competitive electricity market and lift restrictions on private power generation are expected to bring down electricity prices.

Still, it will take time to gauge how well the overhaul is working, said Jeremy M. Martin, director of the energy program at the Institute of the Americas in San Diego.

“A few years ago we wanted to see the constitutional reform,” he said. “Then we wanted to see the secondary reform. Now we have to see the terms of the first contract.”