

therefore focus on developing a robust manufacturing process to produce reliable and cost-competitive products. While specific projects have not yet been defined, Taub said, “Priorities will be set by finding common challenges that can be addressed across at least two sectors—land, sea, and air transportation—and since projects are industry-driven they are therefore very relevant for commercialization.”

These two new materials-focused manufacturing institutes are part of a larger initiative to establish a full national network of up to 45 manufacturing institutes in the United States. The

National Network for Manufacturing Innovation (NNMI) launched its pilot institute in Youngstown, Ohio, in 2012. This first institute, called the Additive Manufacturing Innovation Institute but rebranded as America Makes in October 2013, is focused on additive manufacturing, which includes three-dimensional printing. A fourth manufacturing institute, the Digital Manufacturing and Design Innovation Institute, to be headquartered in Chicago, Ill., was also announced in February 2014.

In addition to the first four institutes, President Obama has announced a new competition for an Advanced

Composites Manufacturing Innovation Institute and plans to announce three more manufacturing institute competitions over 2014. While the Obama Administration has utilized existing funds to establish the initial four manufacturing institutes, significant further expansion of the network will require congressional action. A bipartisan bill that would create a manufacturing network consistent with the NNMI and led by the Department of Commerce was introduced in both the Senate and the House in the US Congress in July 2013, but has not yet been taken up by either chamber.

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### South Africa may be ending its downward trend in R&D investment

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While the gross expenditure on research and development (GERD) in South Africa had been in decline since 2006, the latest R&D survey shows what may be a reversal in this trend. For two years in a row, R&D investment maintained the level of GERD at 0.76% of the gross domestic product (GDP). The latest report captures numbers from 2011/2012.

“We anticipate that we are turning the corner and starting to increase the level of investment in R&D once again in South Africa,” said Derek Hanekom, Minister of Science and Technology.

The National Development Plan (NDP) calls for greater investment in R&D, combined with efforts to make better use of existing resources, the development of more institutions that facilitate innovation, and enhanced cooperation between public science and technology institutions and the private sector. In response to the NDP’s call

for greater investment in R&D, government has included an ambitious target of achieving an increase in R&D investment to 1.5% of GDP by 2019.

The largest percentage of GERD—at 17.2% in 2011/2012—is in the medical and health sciences, showing a steady increase year by year. Materials science received 0.7% of the GERD, which is up slightly from 2010/2011, yet still far below the 1.2% of GERD it received in 2009/2010.

According to the survey, South Africa’s R&D intensity of 0.76% was below the world average GERD/GDP ratio of 1.77%. For 2011/2012, Israel is the highest with GERD as a percentage of GDP at 4.80%; then Finland at 3.78%, and Japan at 3.39%. In comparison to the five major emerging national economies, South Africa R&D intensity falls below 1%, while the others are above 1% (excluding India).

The R&D survey is conducted

annually in South Africa by the Centre for Science, Technology and Innovation Indicators (CeSTII) on behalf of the Department of Science and Technology (DST). In addition to R&D investment levels, the survey also generates insights into R&D personnel trends in South Africa. From 2010/2011 to 2011/2012, personnel increased by 7%. According to DST, South Africa will need to maintain this level of increase if it is to take advantage of the knowledge economy.

The Director-General of DST, Phil Mjwara, said that greater effort is required from the private sector. Through interventions like the R&D tax incentives, direct government grants for R&D, and R&D partnerships, government is contributing significantly to supporting business. However, as government increases its level of investment, a similar level of increased R&D investment by the private sector is needed. Over the next few years, the DST plans to enhance its level of interaction with the private sector to achieve the R&D investment targets. □



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