

ABU DHABI TARGETS HIGH- TECH FUTURE

*The Emirate is turning into a semiconductor hub,
writes Ibrahim Ajami*



■ Double-dip recession or not, global consumers are retaining a crush on their personal electronic goods and super-smart mobile devices.

Even in tough economic times, the confluence of advances in computing, communications, mobile handsets, digital content and growing worldwide adoption of the internet is fueling new purchases and creating a mobile revolution.

Not surprisingly, this consumption is becoming more Asia-centric. While China's gross domestic product constitutes roughly

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60 percent of the GDP of the United States, China already consumes more electronics than the US, attributable to China's large middle-class of 400 million citizens.

Powering each of these electronic devices is a semiconductor chip, the "brain" that manages performance of each electronic good — whether it's a laptop, mobile phone, or even your new washing machine or automobile.

Semiconductors are synonymous with innovation and productivity. Over the past 50

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years, the semiconductor industry has transformed our way of life through intense innovation. We have leapfrogged from the invention of mainframe computers in the 1960s to the ubiquity of personal computers in the 1980s to the internet in the 1990s.

Now the mobile revolution is at hand: over one billion units sold with another nine billion on the way, all connected over wireless broadband links to millions of data servers via the “cloud,” delivering content and services anytime, anywhere. With increasing precision, speed and performance, semiconductors underpin this new mobile revolution.

In 2008, Abu Dhabi decided to make a substantial investment in semiconductor manufacturing. It is one of the most technologically complex and sophisticated industries on earth. Over two billion transistors can fit on a microchip the size of your fingernail. No other industry on earth doubles its productivity with little additional cost to consumers. Imagine an automobile coming to market using half the gasoline, giving you twice the mileage, with increased speed at a lower cost – every two years.

The industry is actually a good fit for the Emirate: semiconductor companies require large amounts of capital to compete; a long-term perspective is necessary to ride out the volatility of the industry; and semiconductor manufacturing requires energy intensity. It is high in labour productivity and knowledge.

It is also as global as an industry can get. If you look at Taiwan, Singapore or high-tech clusters like Saxony in Germany or Silicon Valley, you can see what an advanced technology network of talent and technology can do to create job growth and stimulate economic transformation.

Two years ago, Abu Dhabi's leadership published its “Economic Vision 2030,” a road-map meant to chart a course toward diversification of the Emirate's economy away from such a strong emphasis on oil and gas into a more knowledge-driven economy. The objective is to focus on a truly sustainable future by enhancing competitiveness and enlarging the enterprise base. Key sectors, such as aviation, technology and health care, will help drive this economic transformation. An investment in semiconductor manufacturing is fully in line with Abu Dhabi's 2030 vision to diversify its

economy over the next two decades.

So far, the Advanced Technology Investment Company of Abu Dhabi has committed over \$10bn to our portfolio company, GLOBALFOUNDRIES, rapidly making it one of the largest semiconductor manufacturing companies on earth. We began this journey through a joint venture with AMD to acquire that company's former manufacturing facilities in Dresden, Germany, in October 2008.

One year later, ATIC acquired 100 percent of Chartered Semiconductor of Singapore, which at the time was the third-largest semiconductor manufacturing company on earth. On January 13, 2010, the new, unified GLOBALFOUNDRIES went to market, serving customers both in mainstream semiconductor technologies and at the “leading-edge.”

GLOBALFOUNDRIES now serves over 150 customers with its seven existing fabrication facilities. In addition to factories in Singapore and Dresden, a new facility will begin producing wafers in upstate New York, in Saratoga County, in 2012.

ATIC is now working toward creation of an advanced technology ecosystem in Abu Dhabi. But you cannot create a vibrant technology cluster in Abu Dhabi without investing in research and development. You need the collaboration of academic institutions and internationally recognised research entities to bring this innovation to life. We need new students, teachers and academia to collaborate on innovation. That is what has worked so well in other parts of the world.

The Emirate's educational agency has unveiled a new higher education strategy which is aligned with the needs of key industrial clusters that fuel this research and development vision. The goals are a) to raise the quality of Abu Dhabi's higher education to international levels; b) to align education with Abu Dhabi's economic, social and cultural needs; c) to build and maintain a research ecosystem to drive an innovation-based economy; and d) to make education affordable.

By 2018, the annual spend on this strategy will be over \$1bn, much of it directed at R&D. This will elevate Abu Dhabi's R&D expenditure to around 0.75 percent of GDP, approaching advanced world levels which range from 1.5 percent of GDP to just over four per cent of GDP.

This will not only be essential to semiconductors and advanced technology, but will drive innovation in aerospace, health care, and renewable energy, among other key pillars of the 2030 diversification strategy.

ATIC is also working with key international research institutions to forge a path for sophisticated R&D innovation on the ground in the Emirate. We recently hosted representatives from the world's most respected research institutions, in conjunction with the Semiconductor Research Corporation and the US National Science Foundation, to dis-

cuss the major research challenges facing the semiconductor industry. We have established a long-term partnership with SRC to help us formulate a comprehensive research framework. There is significant enthusiasm for the journey ahead and how Abu Dhabi can play a key role in the industry's future research and development efforts.

The next generation of Emiratis will also be critical to Abu Dhabi's success. It is all part of an effort to upgrade “human capital” here in the Emirate. 90 Emirati university students have spent time working in Dresden, Germany, the last two years to gain hands-on experience in one of the world's most sophisticated wafer manufacturing facilities, GLOBALFOUNDRIES' “Fab 1.” They are part of a new generation of engineers who, along with students gaining Master's and PhD's in Microelectronics at leading institutions around the globe, will lay the groundwork for our future technology ecosystem.

ATIC recently hosted over 250 technology executives at its Semiconductor Vision Summit in Abu Dhabi. Some of the most prestigious company brands in the industry were represented, including Intel, AMD, H-P, Twitter, GLOBALFOUNDRIES, Qualcomm and Broadcom. The dialogue ranged from the limits of increasingly smaller technology to new consumer trends, and how both will affect future economic growth in the Middle East and globally. The participants reinforced the importance of thinking globally, and how we envision the future of technology development. No one can deny that our economic prosperity is getting more globally interlinked.

That is why ATIC is passionate about advanced technology. One day, for instance, the device in your hand might have components in it that are designed in the US, developed and manufactured in Abu Dhabi, assembled in Singapore, and packaged in China. The global nature of the industry is why ATIC decided not to simply build a single facility immediately in Abu Dhabi, but to create and improve a global network of innovation, talent and technology to serve customers and partners in this industry for generations to come. We have a long journey ahead of us, but we are investing in the critical components to make this ecosystem a reality. ◇

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