

## Visions for Taiwan: Innovation Policy Instigating Change and Driving Transformation to Build a Happy Country

The term “innovation” has become widely used in Taiwan. We all know that various processes require “innovation” or technological breakthroughs before market competition can be met. Yet innovation does not necessarily mean that something entirely new must be invented or that special creativity is asked for. Very often the existing resources or skills need only to be recombined to create value for the consumer, generate economic growth, and reach the goal of innovation. But if we only emphasize innovation without attaching importance to the methods of innovation, if we do not respect the fact that innovation should ultimately be about creating value for the consumer and solving the difficulties that people in Taiwan face in their daily lives, then we will eventually have a great deal of innovation for the sake of innovation, or merely the creation of something new.

In the past Taiwan aggressively increased investment in technological research and development. But these R&D investments were mostly geared toward generating a high output of papers and patents in science and technology. Funds were injected into the universities, albeit with a focus on getting the first-rate universities into the Top 100 of global university rankings. Actually, these investments and targets have all only helped foster innovative capacity building. But there is still a long way to go before we can reach our desired goal – another kind of innovation that is able to create value for the consumer and solve life problems.

Based on international rankings Taiwan does perform quite well in terms of innovative competitiveness and level of national income. But on the other hand, Taiwan is a laggard for

other international comparisons such as happiness indexes, most livable city rankings, and number of hours worked. These different international rankings actually reflect past R&D investment and innovation efforts. While Taiwan may shine with a good performance for innovation-based competitiveness, we still need to work quite hard before we can expect innovation to truly bring happiness to the people of Taiwan.

In its future development Taiwanese society faces an important trend, namely fewer children and a dramatic increase in senior citizens as share of the population. Already now it is necessary to raise labor productivity in the entire economy. We will have to use human resources more efficiently in the future, must be able to define more accurately where we are heading, and must create better value for the consumer, so that Taiwan can maintain a certain quality of life and standard of living despite the trend to fewer children and more silver-haired citizens. In its long-term technological development, Taiwan profited in recent years from the spread of digital electronics and network technologies, which generated vigorous economic development. The only problem is that Taiwan’s areas of expertise are already showing signs of maturing. An important coming market opportunity lies in integrating applications to foster next generation technological paradigms for a new wave of economic development, probably in gene technology, nanotechnology, or clean technologies. In all these fields there are opportunities, but so far it is not possible to ascertain where these lie. Given these trends, Taiwan must stay on top of its strength in digital electronics, expand it and establish a lasting advantage in integrating applications.

At the same time incentives must be given for a target oriented accumulation of innovation capacity to foster next generation technological paradigms. Due to the volatile global economic environment and the attraction of China's market, Taiwan must rely on its established strength with regard to innovative capacity, strategically take advantage of the international market as well as the innovation resources of China and other countries to effectively add weight to its crucial role in the global economy, in order to safeguard the autonomous development of the Taiwanese economy. The service and manufacturing industries have become quite important pillars of national economic development. The manufacturing industry contributes somewhat more to economic growth, whereas the service industry absorbs more employed persons. One can imagine that should the service industry be unable to improve its capacity to create added value or to absorb more employees, income distribution will be adversely affected.

The major players of the manufacturing industry tend toward intermediate goods, and their capacity to create more value is not very high. In the manufacturing sector mainly the information and semiconductor industries invest in research and development. Both industries perform quite well with regard to patent productivity and product design capability. But within the global industry chain they lack leader capacity when it comes to integrating product and service systems as well as key technologies. These are the major reasons why the leading manufacturing industries do not have a high value creation capacity. It still takes human talent to truly realize innovations and bring them to bear. The international fight for talent grows fiercer day by day as various advanced and emerging nations actively strive

toward developing momentum through knowledge innovation. Salary levels are a focal point in the migration of professionals and specialists. But other quite important factors come in too, such as whether a professional or specialist has room for development in a certain job, whether his or her family is happy with the living environment, and whether the job creates a sense of achievement.

However in recent years technical and vocational education has been upgraded to tertiary education since we have too many universities. As fewer students sit for the joint university entrance exam, universities compete for a declining number of students during examination times, compromising their role to select the best. The students that our tertiary education produces cannot meet the requirements of industry. As they lack the ability to enter the workplace, students are forced to advance to graduate education, creating even more graduates with a master's degree or doctorate. Without doubt there has been a certain increase in R&D resources within the entire tertiary education system, but the supply of doctorate holders has been even greater. In response to the glut of doctorate holders, academic papers have become the major indicator for objectively measuring the research achievements of each individual. Yet the discoveries and inventions made by all these researchers lack actual application and the sense of achievement that comes with value creation. A very high number of researchers share limited R&D resources. On top of that they are not able to gain a sense of achievement from creating value for the consumer from their research findings. Given such a talent development environment, Taiwan is clearly the underdog in the international competition for human talent!

In order to cope with new trends in global

technological competition, a volatile economic environment, and China's attraction, Taiwan must use innovation policies to bring about change. Taiwan needs to transform into a knowledge-based, innovation-driven nation. It must show off its innovative strength through a deeper and more diverse innovation capacity and truly create value for the customer to solve the difficulties that the Taiwan people face in their daily lives.

We postulate that Taiwan should use innovation policies to instigate change, and build on its existing strengths – the innovation capacity and innovative competitiveness built up in the past – to kick start transformation and foster efforts toward a value orientation that builds on a stronger basis in human talent and intellectual property, and turns Taiwan into a happy country.

We definitely need to set targets for our innovation policy and change the design of our incentive mechanisms to undo the past system that often resulted in “innovation for the sake of innovation.” We must direct Taiwan's strength in innovation capacity toward solving the inconveniences and difficulties in people's daily lives, with the goal of addressing our key shortcomings in industrial competition. We must start out from Taiwan's established strengths in the digital electronics and network industries as well as in innovation capacity and actively deepen and broaden applications to establish a niche as industry standard leader. We must bolster our capacity to develop potential next generation technological paradigms, and need to reform incentive mechanisms to foster the structural optimization of universities and unclog the channels of knowledge industrialization. We need to establish a governance mechanism for technological innovation decision-making and optimize long-term innovation momentum, or

else we won't be able to give Taiwan a basis for sustainable innovation development. **BT**