## A PERSPECTIVE ON INDUSTRIAL DEVELOPMENT AND INDUSTRY - UNIVERSITY COOPERATION IN VIETNAM

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### 1. Overview of industry in Vietnam

### 1.1. The development of industry in Vietnam

Industry plays an important role in economic development, especially in the of industrialization. process modernization and integration into the global economy. In Vietnam, the volume of industrial activity as a proportion of total GDP has increased from 36.7% in 2000 to 38.1% in 2001; 38.5% in 2002 and 39.9% in 2003. The value of industrial production has also increased consistently over the last decade. The average annual increase in the value of 13.9% industrial production was between 1996 and 2000. From 2001 to 2003, the value of industrial production has registered an average annual increase of 14.9%, exceeding the target of 13% set forth for the period between 2001 and 2005.

Most industrial products that are principally used for production (oil and gas, electricity, coal, steel and chemicals) as well as consumption and export (textiles and garments, shoes, handicrafts, agricultural-forestry and aquatic processing) have increased in

output. There has also been considerable new investment in the industrial sector, with many projects undertaken in heavy industry such as petrol, electricity, steel, pulp, fertilizer, DAP fertilizer, mining and metallurgy. Investment in labour-intensive export industries has also increased, including in textiles, footwear and garments, and food and drink processing.

The growth of the industrial sector has led to many structural changes in the Vietnamese economy. As a share of GDP, agriculture, forestry and aquatic processing has continuously decreased from 23.2% in 2001 to 23% in 2002 and 22.3% in 2003. This suggests that the target of 20-21% for the period 2001-2005 will be fulfilled. On the contrary, the proportion of GDP made up of industry and building has continuously increased from 38.1% in 2001 to 38.5% in 2002; rising further to 39.9% in 2003... The size of the services sector meanwhile has actually declined, from 38.6% of GDP in 2001 to 38.5% in 2002 and then falling further to 37.8% in 2003. This suggests that in the next two years, the service sector must rapidly develop if it is to meet the target of 40-41% of GDP for the period 2001 to 2005...

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Regarding the agents of economic activity in Vietnam, the role of the Stateowned enterprises sector has decreased considerably over the last decade. This sector represented over 50% of economic activity in 1995 and has since been reduced to 41.8% in 2000 and 36.8% in 2003. Over the second half of the 1990s. the size of the private sector in Vietnam also fell, from 24.6% of GDP in 1995 to just 22.4% in 2000. This disappointing performance was due to the low growth rate of private sector industry, which increased by only 11.6% in this period, compared with the growth rate of the total industrial sector of 13,9%. From 2000 to the present day however, thanks to the implementation of the Cooperative Law and the Enterprise Law, the relative size of the private sector in Vietnam has increased, to make up 25.5% of the economy in 2003. The growth rate of the foreign capital-owned sector has also strengthened, averaging 22.4% between 1996 and 2000. This has seen the size of this sector rise from 25.1% in 1995 to 35.9% in 2000. Largely reflecting the policy that limits crude oil exploitation, the growth rate of foreignowned industry for the period 2001 to 2003 wasn't as rapid as the previous years. As such, the relative size of this sector increased only modestly to 36.2% of GDP in 2003.

# 1.2. Strengths and weaknesses of Vietnamese industry in the context of integration into the international economy

Industrial development over the past years has achieved fruitful results, significantly contributing to Vietnam's economic growth.

Industrial production has been gradually stabilized and developed. The structure of production has changed considerably; the quality of product has visibly improved and the advantages of industrial production have promoted throughout the community. In the last year, the growth rate of industry value-added jumped to 10.3%; a faster rate of growth than had been achieved in recent years. This outstanding result is largely due to an increase in efficiency in industrial production. The structure in the industrial sector itself has changed towards the processing industry. The processing industry represented 82.5% of industry value-added in 2003, up 2.5% from 2000. In contrast, during this period the size of the mining sector fell 3.1% to 10.5% while the size of the electricity. water and fuel sectors decreased 0.3% to 7.0%.

Strong investment in the development of Vietnam's main industries (oil and gas, electricity, coal, steel, fertilizer, mechanics and cement.) and industries where Vietnam has a

competitive advantage (such agricultural-forestry-aquatic processing, tannery textiles, clothing and footwear, rubber and plastics, food processing, milk and vegetable oil.) have created shifts in the industry composition of the Vietnamese economy. The relative size of several key sectors in the economy including steel, cement, chemicals. plastics, metallurgy, office equipments, electric and computers. electronic equipments, telecommunication have all increased gradually.

The internal content of some industrial products, including automobiles and motorcycles manufacturing and assembly, textiles and and garments equipment manufacturing have also considerably Furthermore. increased. in many industries, such as cotton, cigarettes, paper and dairy cow breeding, domestic industrial activity now encompasses all the different stages of production, from primary to intermediate to final goods and services. As such, industry has developed to meet the demands for production and for people's lives. The positive changes in the industrial composition of the Vietnamese economy have led to a diversification in the scale of production and the use and adoption of technology. There is also now diversity in the quality of industry outputs so as to meet the different demands of all classes of society.

While the industrial sector in Vietnam has enjoyed many positive

achievements, many weaknesses in this sector remain. The volume of output by the industrial and construction sectors is still low by international standards. Furthermore, prices in this sector are growing much faster than the volume of output. This largely reflects the impact of the rising price of imported materials that are used in local production. To counter this inflationary Vietnam should attempt to reduce its reliance on imports by stepping up production ofsome basic and Provided intermediate goods. the production of these goods requires some development of skills in the local workforce and does not impose too high a cost on the environment, this 'importsubstitution' can promote a stronger quality of domestic economic growth in the future. Indeed, we are on the right track. The development of local industrial activity throughout the different stages of production has raised the ratio of domestic materials in final production and has also promoted efficiency in the industrial sector. However, the proportion of domestic inputs in final products is still low. In the textile industry, domestic inputs make up only 10 to 15% of total inputs, while the ratio is around 30% in garments, 30 to 45% in the electronic industry and about 8 to 13% in automobile production.

Another weakness of Vietnam's industrial sector is the low level of export sales from this sector. The export

of Vietnamese industrial products has not been extended into many large potential markets including Africa, the Middle East and Latin America. This shortcoming is due to several reasons, principally the weakness of commercial promotional activities, the lack of a sense of initiative in local enterprises. low levels of market information amongst local firms and a lack of support for international payment procedures.

Imports to Vietnam are currently around 18% higher than exports from Vietnam. Besides the high volume of imports of machines and materials for price of imported production. the materials, especially, steel products, oil and gas, plastic materials, cotton, fibre, and cloth has rapidly increased. At the same time, with the exception of crude oil, the price of Vietnamese exports has increased only slightly, and in many cases hasn't increased at all. The combination of high volumes and rising prices of imports and low volumes and stable prices for exports has seen Vietnam run a sustained trade deficit in recent years. By promoting export growth and local production of some goods that are currently imported, Vietnam should be able to turn this drag on economic growth around.

Another disappointing feature of Vietnamese industrial sector is that the government's policy of creating motivational economic sectors, or industrial zones, has not turned out as planned. The area of land set aside for these zones was too small and while these sectors attracted a large amount of foreign capital, the local implementation of projects under this policy was not efficient. As a result, these industrial zones have not been successful in attracting or developing talented labour. and exports from these sectors has been low. This policy therefore, despite the intentions. best of has not been successful in improving national competitiveness or promoting sustainable economic development.

Industry in Vietnam also needs to strive further modernization. Presently, the ratio of investment in renovating equipment and technology in some industries is less than investment in extending and improving capacity. The speed of upgrading and replacing old equipment and technology is slow, particularly in state-owned enterprises. While the technology level in production in major industrial zones such as Ho Chi Minh City, Dong Nai and Hanoi is improving, it has been a gradual process, and the take-up of new technology and the modernization of the agricultural process in rural areas remains low. High rates of renovation and replacement of capital equipment is generally only achieved in sectors that have high levels of foreign investment, largely due to the transference of technology from parent companies to the local operations. As such, the density of advanced technology in Vietnam's industrial sector is low and

requires considerable improvement if the nation is to continue to improve its comparative advantage as a producer and exporter in the global market.

Innovation is another area that warrants further development in The capacity Vietnam. to design products is underdeveloped in many enterprises, the model of production is monotonous. not multiform. and conforms within each market segment. Competitiveness in local markets is also not strong.

The transformation to a modern and dynamic labor force has also been slow. The quality of local labor generally remains insufficient, with the majority of employees unskilled workers in the garment, footwear, building materials, agriculture-forestry and aquiculture sectors. As a result, the value-added of most employees is not high. While a number of employees have been trained by colleges and universities, there are still few opportunities to find a job suitable for their profession in Vietnam, such that many workers are yet to have an opportunity to promote their full ability.

The level of association and cooperation between enterprises within and between industries, as well as between industries and universities and other research institutions also remains insufficient in Vietnam. Many enterprises operate in a closed environment, protected from any outside influence, sometimes even from different segments of the same corporation. This means that many firms cannot learn from the activities of other firms, causing investment costs to increase and ultimately wasting the general ability of the whole industry.

Another weakness of industrial activity in Vietnam is the unwieldy management techniques in place in the majority of state owned enterprises. Indeed, excess management often makes between 10% of total up 6 to employment in enterprises. A number of officials have not undertaken training to advance or even keep their skills up to date. As a result, there are many officials that are not skilled in modern business management and therefore lack the preparation to deal with the challenges posed by the international integration process. Furthermore little importance has been attached to the question of arranging and training for succeeding generations. If Vietnam's economic development is to continue, it is vital that such education and training is undertaken.

### 1.3. Orientations and solutions for development

Vietnam must aim to build up a modern industry that can withstand and indeed lead the process of international economic integration, and sustainable development.

Promoting investment into key industries, including natural resources,

timber, petrochemistry, electric and electronic equipment, information and communication technologies, steel and equipment manufacturing must take place. These industries have a high content of technology, involve a large amount of value-added by local industry and workers and have a large international and potentially domestic market size.

Priority should also be given to the further development of agricultural, forestry and fisherv processing industries. Reflecting Vietnam's comparative advantage, these processing industries have an ability to attract investment capital from economic agents outside the State-owned sector, such as international local and private enterprise.

The natural resources sector. including metallurgy, chemicals, oil and gas and timber, has maintained its growth rate to meet the basic needs of economy. The growth in this sector has so far been conducted in a sustainable way, with a focus on the rational exploitation and preservation of natural resources. Policies have also limited the of national natural exploitation resources for To export. ensure Vietnam's towards path economic development remains sustainable, these policies must continue.

The development of the manufacturing and distribution industries of electricity, fuel and water must remain a focus in order to ensure

sufficient power consumption for economic sectors. This development should occur in line with the principle of "electricity in advance", which should see policy directed towards the investment promotion of in the development of electricity and other power sources and distribution grids. Policy should also encourage local industry to adopt new technologies and efficient management in order to ensure that limited power supplies are used efficiently and not wasted.

At the broader level, the government sector must conduct ongoing monitoring and research so that policy schemes and plans for local industry can be quickly adjusted in line with changes in demand from the domestic and foreign markets. as well as changes in the structure of the local and international economy. Policy should particularly focus on encouraging a further expansion of the private sector and in providing a route-map to improving the competitiveness of each product in each region and local area. To ensure that the Vietnamese economy does not face 'bottlenecks' in its industrialization process, policy should encourage the ongoing development of the electricity and power generation sectors.

Priority should also be given to the development of small and medium-sized industries. In particular, these industries must be encouraged to increase investment in new and advanced technology, and to diversify into a broader range of manufacturing products. Increased investment in technology and diversification of the manufacturing base will not only better meet local demand, but will also facilitate an expansion in exports. This could also play an important role in promoting more environmentally sustainable manufacturing practices.

There is also an urgent need in Vietnam to create a link between industry. university and scientific research. Science needs a bigger role in industry. Together, these sectors can build a nursery garden of technology and combine research and training with the development of industry. Links must created between research institutions and the management and deployment sectors within enterprises in order to apply the results of research and technology into the production process. Ultimately, this will see science and technology become a direct employee of industry.

### 2. Industry - Academy Cooperation in Vietnam

### 2.1. The benefits of Industry - Academy Cooperation

The promotion of Industry - Academy Cooperation (Universities - Enterprises) has delivered many benefits to both parties:

For Universities', enterprises are clients who use a broad range of the university's products. This includes training products (bachelor degree,

masters degree and PhD), research products (inventions, technological solutions, types of management,), and other service products (short-term training courses, conferences, consultancy).

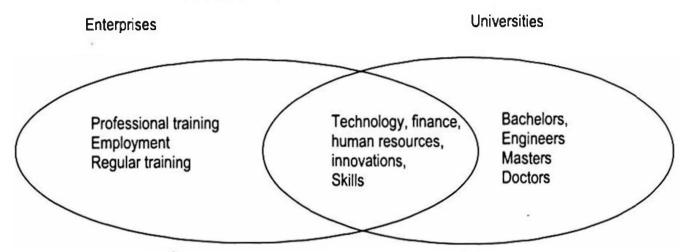
Enterprises have also provided complementary financial resources to universities through building laboratories and high quality research Furthermore. centers. enterprises provide financial support via research contracts. support for student's scholarship, payment for short-term training courses by contracting universities to train human resources for enterprises.

Beside the above interests. enterprises also act as critics to verify the activities of universities in terms of the quality and applicability of training and scientific research and services. By participating in training and scientific research activities, enterprises also play an important role, by bringing a severe environment for students to make contact with reality, and by guiding student's essay and report writing skills as well as their and scientific research interests and methods. Enterprises can also provide a vital space for work experience where students can develop their practical skills.

The promotion of Industry - Academy Cooperation also provides many benefits to enterprises. Universities "produce" and supply high quality human resources, inventions, technology and management processes. By using these 'products', enterprises can therefore increase labor productivity, use other resources more effectively and efficiently, and strengthen their competitiveness.

As the above discussion demonstrates, university - enterprise cooperation is a mutually beneficial relationship (Chart 1). Enhancement of this cooperation therefore will promote the strong development of both university and industry.

Chart 1: Universities - Enterprises cooperation



## 2.2. The current situation of Industry - Academic Cooperation in Vietnam

In 2003, excluding the defense sector, Vietnam had 2 national universities (National University in Hanoi National University in Ho Chi Minh City), 3 zone universities (with 20 member universities), 76 universities and institutes and 119 colleges. Within this, there are 2 semipublic universities. 16 private universities, 4 semipublic colleges, 3 private colleges. In sum then there are 220 training universities and colleges' including member universities.

In the above training campuses, there are over 38,608 lecturers, in which there

are 5,476 doctors (14.2%), 10,598 masters graduates (27.4%), and 21,239 university and colleges graduates (55%). Within that, there are 324 professors (0.84%) and 1,330associate professors (3.4%). Almost universities and scientific staff are concentrated in Hanoi and Ho Chi Minh City.

Every year, these training campuses supply a great quantity of students for the labor market. The number of university and college students increased 4.53 times in the 10 years from 1993 to - 2003, from 225,274 students in 1993 to 1,020 667 students in 2003 (Table 1). These students met at least the basic demand for labor by enterprises in Vietnam.

Year	Number of students		
	Total	Regular and gathered training	Other *
1993-1994	225,274	118,589	106,685
1994-1995	367,486	136,940	230,546
1995-1996	414,183	173,080	241,103
1996-1997	568,621	277,731	290,890
1997-1998	671,120	369,596	301,524
1998-1999	798,857	469,869	328,988
1999-2000	893,754	509,637	384,117
2000-2001	918,228	552,461	365,767
2001-2002	974,119	579,197	394,922
2002-2003	1.020.667	604.396	416,271

Table 1: Number of university and college students in Vletnam (1993-2003)

Note: (\*) Including in-service training, crash course, second university degree training, unaltered training, part time, remote, associative training, selective training

Source: Education statistical data of universities and colleges, Ministry of Education and Training, Vietnam, 2004.

Besides supplying labor resources for enterprises, universities also took part in applied research activities to aid the development of enterprises. In the period of 1996-2002, universities carried out research on over 3,800 subjects and conducted 90 trial production projects. science recent years, the technology research activities universities have been conducted not only in laboratories but have also been applied fully in enterprises. By 2002, universities had established 167 campuses for undertaking scientific research in association with industry. Within this, there are 20 applied research institutes and 147 executive

research centers and consulting firms. With many achievements of science and technology research applied and carried out in enterprises, the universities have been able to contribute significantly to the achievements of Vietnamese's enterprises.

While there have been many achievements, cooperation between universities and enterprises in Vietnam still suffers from some weaknesses. Cooperation is still not the norm and is there is little policy, on behalf of either universities or enterprises, attempts to set out long-term objectives or frameworks. Instead each cooperative project tends to be a separate and spontaneous affair, based mainly on the relationship of the people involved. Cooperation is also not yet at a scale where the full advantages, to universities and enterprises, can be realized.

Moreover, the relationship between enterprises and universities is not yet close enough for these organizations to fully development and deliver the requirements that each side requires to ensure mutual benefits are realised. The training and service products of universities often don't meet the labor quality requirements of enterprises. Also, many scientific research results technological developments formulated in universities have yet to be applied to the reality of Vietnam's developing enterprises. Furthermore, Vietnamese enterprises have not had a custom of supporting the training and research activities of universities and the status of direct association between universities and enterprises is often not recognized.

## 3. Proposals to stimulate Industry – University Cooperation in Vietnam

### 3.1. Create a market for research, science and technology

Universities and enterprises are each other's customers, so they must have a market in which they can trade their goods and services. The development of such a market can help repair the general situation we face now, whereby enterprises need training, research or service products according to their development requirements but do not know where to find them, while universities mainly still conduct training and research in a confined academic environment. close not to the requirements of enterprises. Through trading on a science-technology market, both sides will better know each other's requirements and ability to pay and provide. The creation of such a market therefore can directly link the inputs universities of and outputs and enterprises.

Chart 2 shows that the training programs (Bachelor, Masters degrees) of universities must be established based on the requirements of enterprises, so that graduating students can immediately meet the labor quality requirements of enterprises. Likewise, research undertaken in post-graduate doctoral training programs must be oriented towards an application for enterprises. Chart 2 also shows the role that enterprises can play in directly defining the priorities of universities.

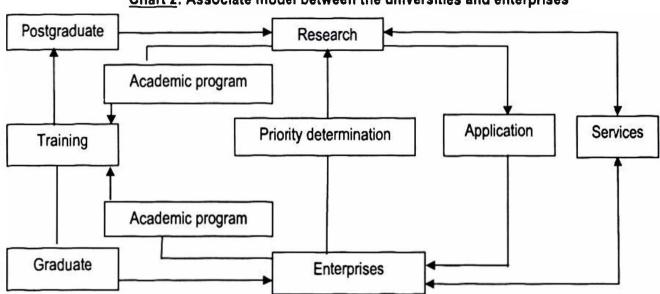


Chart 2: Associate model between the universities and enterprises

#### 3.2. Create a coordinating body

To best promote mutually beneficial relationships. universities enterprises must adopt a formal model of long-term cooperation. In doing so, it is more than likely that universities and enterprises may need to appoint an individual or indeed an entire unit to address and co-ordinate the relationship directly. This individual or unit can formulate long-term policies and goals and co-ordinate research and practical activities. It is also important that a forum for communication between universities and enterprises is developed. Through such a forum, universities and enterprises can exchange ideas. on business. management and innovations, as well as on the direction of the performance and structure of the economy. This will allow universities to improve their products services. including human and resources, to better meet the needs of enterprises. It will also provide an avenue where universities can make demands from enterprises, in terms of funding or business and management support. Eventually, the relationship can be strengthened further through the building of joint research and business facilities, as well as through the promotion of university scholarships and business internships.

### 3.3. Strengthen the ability of universities

To begin, universities need to adopt a more innovative means of thinking and management and also need to bolster their confidence when associating with enterprises. For a long time, Vietnamese universities have act in a closed environment, where they have taught students and conducted research on subjects according only to their own interests. instead of addressing enterprises' needs. Indeed, the reality is that many universities don't trust cooperation with enterprises. Against this background, it is no surprise then that enterprises in Vietnam don't want to cooperate with the universities. In order to make enterprises care about cooperation with universities, universities must exchange thoughts and plans, and must consider enterprises as their important customers.

As universities work to build relationships with enterprises, they also need to build strong research groups, modernize research tools and practices by applying new technologies, develop consultant centers and deploy new ideas and technologies to the production process. Through this, technological science can initiate and develop thoughts and inventions and then hand them over to the enterprises.

## 3.4. Build an enforceable legal environment for intellectual property rights

Protecting intellectual property rights is one of the tensions between universties and enterprises in Vietnam at present. Many scientific values and technological inventions of the universtities aren't protected by enforceable intellectual property rights. Enterprises don't pay corpyright to the inventor when they exploit new technologies. This not only reduces the confidence of researchers in their relationship with enterprises, but ultimately discourages researchers and universities from investing time and money in new innovations. Hence, if we are to guarantee the interests of university researchers, we need detailed regulation, implementation and enforcement of intellectual property rights.

#### 4. Conclusion

Industrial development has come a long way in Vietnam in the last decade and has played an important role in the recent rapid economic development of the nation. However, if the economic development of Vietnam is to be sustained into the future. the relationship between universities and enterprises must be fostered strengthened. These sectors both possess unique comparative advantages that, if exploited appropriately, will deliver not only benefits to both universities and enterprises, but will also ultimately deliver positive results, in terms of stronger economic growth and higher living standards, to the entire nation.

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### VIỄN CẢNH PHÁT TRIỂN CÔNG NGHIỆP VÀ SỰ HỢP TÁC GIỮA ĐẠI HỌC - CÔNG NGHIỆP VIỆT NAM

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Ngành công nghiệp giữ vai trò quan trọng trong việc phát triển nền kinh tế địa phương và hội nhập kinh tế toàn cầu của các quốc gia đang phát triển. Hơn một thập kỷ qua. Việt Nam đã có những tiến bộ đáng kể trong việc thúc đẩy vai trò của ngành công nghiệp. Các hoạt động của ngành công nghiệp trong khu vực tư nhân đang phát triển trở thành một bộ phận quan trọng của nền kinh tế. Sản xuất địa phương được đa dạng hóa với các loại sản phẩm và dịch vụ trên quy mô rộng hơn. Tuy nhiên, cùng với sự phát triển của ngành công nghiệp tại Việt Nam là những thách thức không nhỏ. Đặc biệt, các doanh nghiệp phải chứng tỏ năng động hơn, hiệu quả hơn nếu thực sự muốn canh tranh thành công trên thị trường nội địa và quốc tế. Điều quan trong này có thể đạt được thông qua việc thúc đẩy sự hợp tác chặt chẽ giữa các trường đại học và các doanh nghiệp tại Việt Nam. Hiện tại mối quan hệ này còn rất lỏng lẻo và có xu hướng không tương xứng giữa sản phẩm đầu ra của các trường đại học bac gồm cả nguồn nhân lực và công nghệ với yêu cầu của các doanh nghiệp. Chính điều này đã hạn chế hiệu quả, năng suất và cuối cùng là tăng trưởng kinh tế. Một mối quan hệ chặt chẽ hơn giữa các trường đại học và các doanh nghiệp có thể được tạo dựng thông qua các hoạt đông như tạo thị trường trong nước cho các nghiên cứu khoa học và công nghệ; thành lập trung tâm điều phối các hoạt động và cung cấp diễn đàn trao đổi giữa các trường đại học và các doanh nghiệp; tăng cường năng lực nghiên cứu của các trường đại học và đảm bảo quyền bảo hộ trí tuế tại Việt Nam được thực thi.