

The current world's techno-science has produced new and advanced technologies which led to the alteration of economic structure and very fast development in many countries. Meanwhile it heavily intensifies the course of international labour division and exchange. This marks a new peak in the development of human intelligence and has profound effect on the growth pace of peoples' history and lives.

I. THE ROLE OF SCIENCE AND TECHNOLOGY - ACHIEVEMENTS AND DEFICIENCIES

1. The role of science and technology:

Every social-economic form is decided by the level of development of productive forces. Science-technique-technology is one of fundamental factors of productive forces. In order to raise productivity and product quality, to renew economic structure, to reasonably employ natural sources, to protect environment, every country has to build advanced techno-scientific potentials. The resolution No. 26 of the Vietnamese Communist Party's Politburo says: "Science and technology is a strong impetus to the performance of renovation, stabilization, development in the socialist orientation".

2. The cycle of science-technique-production

The cycle of science-technique-production must be carried out to apply scientific achievements. This cycle will make plans, even human dreams come true; it is normally called the process of materializing scientific ideas.

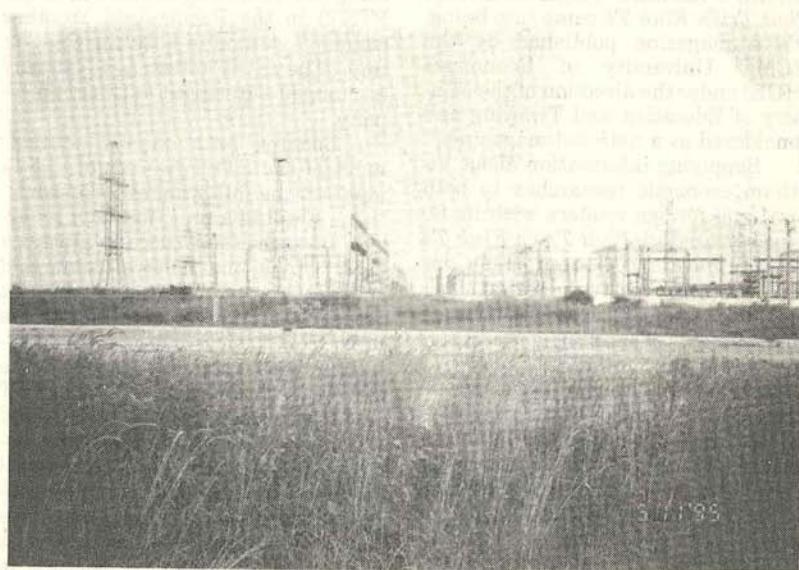
Science is a cradle where ideas, preconditions, rules...are raised. This is the first stage having a decisive role which is known as axis of this cycle. Its meaning, as stated in Marx and Engen's work, is "the change of production process from simple labor to scientific one".

Technique composes material factors such as labor tool, energy, materials and technological methods which are invented and used by human being to produce wealth. Technique is one of basic factors of productive force. Human factor and its knowledge level is a factor determining the development of productive force.

Technical advance is the process of incessantly innovating and perfecting technical elements (equipment, energy, material...) and studying application of new, advanced processing technologies. Technology is the stage in the middle of the cycle, functioning to make science approach production

THE ROLE OF SCIENCE AND TECHNOLOGY IN OUR COUNTRY'S INDUSTRIALIZATION AND MODERNIZATION

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reality.

Production is the last stage of the cycle. It aims at turning out products and services for certain consumption demand. Through results of production, the above-mentioned cycle is considered success or fail. At the same time, production is an important factor directly impacting on science and technology. Production itself is a "customer" directing science and technology to concrete targets and certain realities.

In order to accelerate scientific advance every stage in this cycle must be shortened by many ways, avoid "dead time", that is, the transitional period between stages (the period from invention to production is of 10 years on average). Every country tries its best to shorten this period.

3. Achievements and deficiencies in science and technology

a. Our country's achievements in science and technology is noteworthy,

especially in basic survey, agricultural science, medical and pharmaceutical science...The following are some achievements in industry, transportation, communication...

Industry: in comparison with 1954, the electricity capacity increases by 38 times, output up by 232 times, per capita power up by 43 times.

Through reception of technology, equipment and R&D activities, we built industries of mechanical manufacture, mechanical repair, materials production. The mechanical manufacturing industry has made some products worth exporting. In 1995 the industry plans to export 4,000 diesel engines to ASEAN countries.

Capital construction: Many advanced techniques have been studied and applied from planning and designing to building. Among finished projects, there are some of large size with complicated technique.

In the fight against American invasion, transportation became a hot front. Techno-scientific officials had original inventions. The industry combined effectively primitive means with mechanized ones, diversified transportation means, contributed to the common victory.

The post and telecommunications industry has applied the strategy of modernization and advanced technologies to raise its service quality.

So far the country has a techno-scientific army including 700,000 graduates, 8,000 doctors, of which 20,000 is both teaching and scientifically researching in universities and colleges. This is an advantage and potential of our country's techno-scientific source.

The country also has a network of 300 techno-scientific R&D institutes and centers. Over 100 universities and colleges and hundreds of vocational schools are located all over the country. The system has made great contribution to the national education and training.

We can pride ourselves on our achievements. But more importantly, we have to see our deficiencies, limitations and what to do with the aim to make the country's techno-scientific advances catch up with other countries in the world.

b. Limitations and shortcomings

+ The task of training, fostering, assigning techno-scientific officials is spontaneous, lacks unified plan for the immediate future and a long time. The industry structure, level of this army is not uniform, leading officials and highly-qualified experts are scarce. The Government has not attached importance to training skilled workers yet. The investment in this task is very little (the expenditure of this field accounted for 13% of educational budget).

Our country currently has 232 vocational centers. Of which there are 135 official schools. But these schools are in outdated conditions, their teaching equipment is both deficient and poor. Many teachers who graduated tens of years ago have limited capacity.

A survey in 89/103 universities and colleges showed only 12.9% of lecturers were doctors. Professors aged 51-56 accounted for 75%. A survey in 252 scientific research institutions revealed doctors accounted for only 7.6% (2% in social science).

If there is no training strategy to rapidly fill the gap, then this deficiency will affect the creating of human resource for our country's techno-science for a long time.

Regarding techno-scientific information network, there are two centers for specialized documentation, 2 national libraries, 35 information agencies of ministries, 40 information agencies at municipal and provincial level, 500 small libraries in enterprises, schools, hospitals. But these centers' facilities are poor, lacking fast photocopying machine, computers for reserving documents. The international cooperation in this field has not been expanded yet.

The lack of information for a long time caused techno-scientific officials' knowledge to become seriously worn out and downgraded. They have few chances to contact, attend important international conferences, even has not enough money to buy necessary documents.

The State investment capital in scientific R&D is very little (1% of GDP), this source accounts for 5-7% in developing countries. Experiences of these countries showed that in the investment for scientific research, the fund from the Treasury should represent 15-20%, the rest should come from companies or other economic sectors. In our country this source is still small. However the State capital is a crucial source granted to projects at national level or of defence and security. It is important to perfect the way of allocating capital and evaluating scientific projects.

+ The subsidy mechanism; egalitarianism in treatment policy; no legal frame to protect industrial ownership, patent, "grey matter product" not regarded as a special kind of commodity...all eradicated the impetus to techno-scientific development, did not create favourable conditions for development of grey matter although the Party's advocacy is completely proper.

II. THE ORIENTATION OF TECHNO-SCIENTIFIC DEVELOPMENT IN THE COMING YEARS

The orientation and target of techno-scientific activities in the coming years must be attached with industrialization and modernization; alteration and construction of appropriate economic structure including structures of industry, product, technique, territory. They must be combined with the target of socio-economic development.

The concrete effort can begin from the research and development of grey matter intensive industries such as informatics and electronics telecommunication, oil refinement, exact mechanical engineering, new sources of energy (including atomic power)...to make ground for altera-

tion of economic structure.

The Government should concentrate techno-scientific army on building and modernizing step by step the national economy. The available technologies should be perfected and new ones should be prepared to develop. The country should select industries as leading ones and study application of advanced technologies of processing food.

Vietnam's economy should integrate into the world trend to build non-polluting industries and ecological ones which consume little raw materials, energy; discard little waste and are distributed proportionally all over the country.

Stemming from the Party's common line, based on tasks and targets of socio-economic development and specific conditions of our country...science and technology need best studies and find out the most appropriate way in order to improve the country's advantages of labor, tropical resources, geographical position for socio-economic development.

In his speech delivered at the eighth session of the 9th Term National Assembly, the Prime Minister said: "An important issue requiring special consideration is that due to comparative advantage, some countries inside and outside Asia are transferring production to those having lower costs. This opportunity is also coming to our country and depends on our seizing ability...There are several our industries omitting some steps to develop directly into the modern stage (post, information, aviation, steel production, printing industry, textile...). The achievements are not enormous, but very important because they showed us the way and step that make us to keep pace with development of superior countries. All we should make are proper decisions and policies".

Recently Mr Derek William, Vice-president of Oracle Corporation, forecasted Vietnam could export computer software in two years. Answering the question: why do you choose Vietnam whose information technology is still backward on the whole?, he said: "Your informatics is just underdeveloped. However that is mainly a considerable advantage. The Western countries can only begin to develop a new network accounting for 30% of the whole system and the remainder is outdated. As for Vietnam, since information technology is still backward, you can develop a nearly 100% new network. That is one of major reasons why we invest in Vietnam" ■

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