

Knowledge-based Economy – a Key Process for Sustainable Development

Prof. Edvins Karnitis, Republic of Latvia

Executive summary

Latvia has started co-ordinated activities to promote the knowledge-based development of its national economy, governance, education, and social policy and to bring its competitive advantages to the fore. Latvia's approach to knowledge-based development involves the facilitation of innovative principles in various spheres of activity and professions. Latvia has an excellent basis for further knowledge-based development, as it enjoys the highest adult literacy rate in the world.

Cluster strategy is focussed on streamlining and raising the competitiveness of businesses, and on creating an environment, that is favourable for investments and innovation. The State is supporting creative processes in various fields, with particular emphasis on projects in priority areas for the country. The integration of various types of commercial activities into the *Internet* environment will increase the competitiveness of Latvia's national economy in the global market and help to create new highly skilled jobs.

In order for Latvia to be successful in its endeavours, every individual and every company in every region of the country must be provided with the opportunity to participate in Latvia's innovative processes. Various activities to facilitate qualitative *Internet* access, increase the general educational level, and ensure the availability of information have therefore been undertaken.

Some of Latvia's major accomplishments on the road to an information society and knowledge-based economy include:

- the active design of computerised methodological materials and textbooks, the training of teachers to use them, the wide usage of advanced information technologies for learning physics, chemistry, mathematics, history, languages *et al.* in primary and secondary education, the introduction of the *European Computer Driving Licence* in schools curricula;
- the development of a logically unified information processing mega-system with a common data field and unified user's interface to integrate all set of public information systems, and ensure their interoperability; the mega-system is being interconnected with a national portal, thus ensuring a real base for the development of all e-governance functions too; full compliance with today's basic principles of the IDA Programme, allowing for the integration of Latvia's information systems into Transeuropean telematic networks.

Several basic weaknesses hinder these developmental processes:

- the contribution of universities toward the resolution of national priorities is insufficient; the share of programs in life sciences, technologies, mathematics is too small for knowledge-based development; the training of specialists with higher qualifications (Master's and Doctor's degrees) in priority fields should be expanded and improved;

- there are no territories without opportunities for development in Latvia, but regional development is not balanced and significant socio-economic differences exist between various regions of the country; the economy in rural areas is not sufficiently diversified as the agrarian industry dominates; the development of a knowledge-based economy in the provinces has not really begun.

Only the implementation of truly innovative approaches, the revision and restructuring traditional procedures, the expansion of opportunities for all individuals, and the exploitation in full measure of the opportunities that are provided by increased knowledge potential will ensure the achievement of maximum social and cost-benefit effects.

Latvia in today's world

A great deal has been accomplished since the restoration of Latvia's independence in 1990 -- the reestablishment of a democratic system in the country, the development of a functioning liberal and open market, and a number of steps in the process leading to Latvia's integration into transnational organisations. Latvia's macroeconomic indicators have been balanced (Table 1) and economic reforms have brought about a stable situation¹.

Table 1

Key indicators of the national economy

GDP growth rate, 2001 (estimated)	7.4%
Consumer price index, 2001	2.5%
Foreign direct investments as % of GDP, 2000	5.7%
Domestic investments as % of GDP, 2000	4.4%
Foreign trade as % of GDP, 2000	70.7%
Budget deficit as % of GDP, 2001	1.8%
Central government external debt as % of GDP, end 2000	8.0%

A radical increase of the amount of knowledge accumulated by humanity and the possibilities for the processing of information open principally new, unprecedented opportunities for the improvement of living standards in Latvia as well. Information and knowledge is becoming the main moving force for development in all spheres of life. The significance of raw materials and energy resources as well as the other components of physical capital are not decreasing, but thanks to knowledge their exploitation is becoming more rational.

There is an increasing ability for small countries such as Latvia and even its regions to act globally, gradually developing those branches of the national economy where we see our comparative advantages. This entails new challenges and hard work in order catch up with the highest-ranking countries. The UNDP's annual *Human Development Report*² constructs composite human development indexes for more than 170 countries. An analysis of the indexes reveals Latvia's fast and stable progress in global rankings (Fig. 1).

¹ Central Statistical Bureau of Latvia. www.csb.lv

² Human Development Report. www.undp.org/hdro

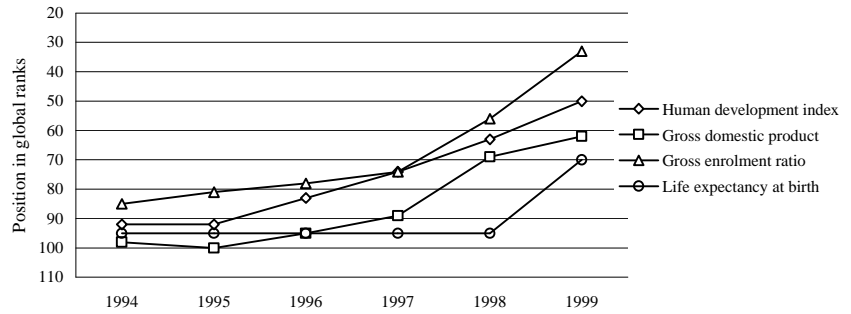


Fig. 1. Progress of Latvia in global ranking

Knowledge – a basis for sustainable development of Latvia

A concept *Latvia: from Vision to Action*³ has been elaborated and a number of intercoordinated sectoral strategic documents were approved by the Cabinet of Ministers during 1999-2001 to ensure the efficient use of existing advantages and opportunities; to eliminate risk factors (Fig. 2); and to set forth an integrated economic, political and social strategy for Latvia's sustainable development in order to attain the living standards of the most highly developed countries.

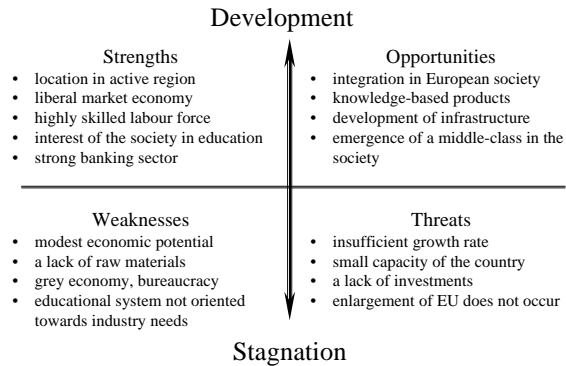


Fig. 2. Brief SWOT analysis for Latvia

Taking into account Latvia's limited human and natural resources, the small capacity of its national economy and the small size of its market, the most realistic way to implement a development strategy is through the intensive usage of knowledge, the promotion of a high level of education and the reorientation of Latvia's labour-intensive economy to a knowledge-intensive economy⁴ (Table 2). The proper role of the government during the transition period from an industrial society to an information society, and the balance of State regulatory

³ Latvia: from Vision to Action; a Concept for Sustainable Development. www2.acadlib.lv/grey/valstsparvalde.htm

⁴ Long-term Economic Strategy for Latvia. www.lem.gov.lv

functions with free market principles are directed to creating a friendly, stable and favourable environment for a knowledge-based economy.

Table 2

Emergence of a knowledge-based economy

High tech exports as % of total exports, 2000	3.0%
High & medium tech exports as % of total exports, 2000	12.4%
Electricity consumption per capita, 2000	2498 kwh

Latvia's approach to knowledge-based development is not limited only by high technologies. Knowledge management as a complex process and a foundation of economic and social life should become the *modus operandi* on a national scale. Along with capital, the work force, and technologies, knowledge as a resource and asset has an ever-increasing role in any field. The facilitation of knowledge-based principles in every branch, profession and sphere of activities will create a favourable environment for the creative work of all members of society. A man as an owner of knowledge becomes the key factor for economic growth and added value creation.

Co-ordinated activities are being realised with emphasis placed on those unified development trends of the national economy, governance, education, social policy and other sectors that are internationally and qualitatively competitive, that make use of Latvia's competitive advantages and whose development will stimulate the economic development of the country. A number of criteria have been defined for pointing out these priorities, while preserving existing advantages and prerequisites -- high knowledge base of specialists, capacity of the education system, adequate technological level, high added value of goods and services, small consumption of energy resources and raw materials, demand for products and international market niche that could be conquered. There are several fields that answer these conditions nowadays – information technologies, biotechnology, pharmacology, wood chemistry, several areas of advanced material technology.

We have enounced the major obstacle and risk factor too – Latvia can prove to be not sufficiently significant and numerous to capture a substantial niche on the global economic scale.

The policy can be implemented through simultaneous activities in two major directions. Re-industrialisation of traditional branches of national economy, including creation of advanced industry, technology transfer, employment of existing high skilled labour force, development of new products and technologies⁵. On the other hand development of new post-industrial spheres is supported. A completely new economic model based on innovative economy is emerging.

Industrial clusters

In order to improve functioning and to raise competitiveness of businesses, to strengthen cooperation between companies and other related institutions, to create an environment, which

⁵ Industrial Development Guidelines of Latvia. www.lem.gov.lv

is favourable for investments and innovations, several enterprise clusters (information systems, composite materials, forestry and engineering clusters) are being developed in Latvia⁶. Interests keeping cluster members together are buyer-seller relations, common technologies, common customers and/or distribution channels, common sources of labour. Clustering does not restrict competition but rather promotes it, cluster members are simultaneously competitors and cooperating partners. The planned synergy effect would manifest itself as risk minimisation, joint research and development activities, forming the *critical mass* to enter foreign markets, exchange of knowledge and reduction of various costs. For a small country (and hence for enterprises that mainly are small in the global scale) focus on cluster-based development becomes a strong tool to increase competitiveness of the Latvia's economy in the international market.

The information systems cluster⁷ is the most successful so far, its aim is to increase international competitiveness of the participating companies by reinforcing mutual cooperation with other institutions. Implementation of industrial software development standards, resource sharing policy and procedures, knowledge sharing, professional training for cluster participants, provision of internship opportunities for IT students, sales channel development and joint marketing activities are the primary, most intensive and active cooperation forms. The initial activities -- export software development and applications services provision -- are based on the knowledge and experience accumulated by the cluster members, later they will be expanded by offering also other outsourcing services for export markets (Table 3).

Table 3

Potential of the IT cluster

ICT products and services as % of GDP, 2000	4.5%
Software production as % of GDP, 2000	0.4%
Contribution to GDP per employee of software industry as % of average in the economy	695%
No. of companies in the IT cluster, end 2001	15
No. of programmers in the IT cluster, end 2001	1000

Participation of the University of Latvia and Riga Technical University as well as of the Baltic Computer Academy ensures a considerable research potential. Partners have begun to cooperate on R&D efforts to increase the added value of services for the export market. There are plans to establish a joint R&D centre.

R&D and innovation

Innovation is an important precondition for the formation of a society and economy based on knowledge. The State is supporting creative processes in various fields, emphasising Latvia's needs and priorities, providing special support to R&D projects in fields that are priorities for the country. Maximum innovative benefit from the research efforts, development of new

⁶ Report on the Development of Economy of Latvia, June 2001. www.lem.gov.lv

⁷ www.ebaltics.com

knowledge-intensive products and technologies, their implementation in the national economy should become the main tasks for Latvian research.

The National Concept on Innovation⁸ envisages support to strengthen links between the enterprises and the research potential of university laboratories as well as to promote the creation of an economy open to innovation. A friendly environment for starting up and developing innovative businesses, improvement of key interfaces in the innovation system (education, research, entrepreneurship, legislation, financing) are components of the national innovation policy.

Cooperation with researchers from many countries, experience of participation in the EU Fifth Framework Programme characterize the potential of Latvian research, high-tech companies and innovation support organizations (Table 4).

Table 4

<i>R&D and innovation</i>	
Researchers (full time equivalent) per million population, 2000	1190
No. of countries that are represented by co-authors of scientific publications, 1997-2001	55
5 th FP projects success rate, 1999-2001	27.5%
5 th FP programme "Innovation & SMEs" projects success rate, 1999-2001	52%
5 th FP financing from EC funds as % of Latvia's contribution fee, 1999-2001	187%
No. of patent applications filed per million population, 2001	157
Licences sold per million population, 2001	10.6

The Institute of Solid State Physics of the University of Latvia has been awarded the status of Excellence Centre of the European Union for the investigation and technologies of advanced materials. Ventspils International Radio Astronomy Centre has carried out the first observations within the existing unique *European Ground Station Alliance* radio-telescopes system (Svalbard, Tromsø, Esrange, Sturup, Irbene) located in Latvia, Norway and Sweden. It opens unprecedented opportunities to improve environmental monitoring and to increase its efficiency, to minimise industrial and cross-border pollution, to control the specially protected territories and to solve other matters of vital interest for all inhabitants of the Central and Eastern Europe and Scandinavian countries.

Success in R&D increases the number of issued patents that are destined for domestic and foreign markets, it stimulates attraction of private investments. The most significant inventions during past years have been made in biosynthesis, biotechnology and pharmaceuticals, magnetohydrodynamics and plasma technologies.

Business in *Internet* environment

It is said, that e-business will increase the competitiveness of national economy in the global market by integrating all types of commercial activities into the *Internet* environment. It will encourage the development of new kinds of business activities, create new highly skilled jobs, provide great opportunities for the regional development and for the support of SMEs. The

⁸ National Concept on Innovation. www.lem.gov.lv

concept on creation of favourable environment for e-business⁹ envisages to maximize benefits for all individuals, to establish internationally harmonized *rules of game* and to build trust among participants by various measures.

The spread of various teleworking principles (remote individual and group workplaces, satellite centres and branch offices far away from the main office, mobile work, public terminals and telecentres) would facilitate solutions to employment problems, which are vital for the situation in Latvia, giving new possibilities to co-ordinate development of jobs in Riga, other cities and countryside, minimising the *brain drain* of the qualified workforce, and creating full opportunities to work and to be integrated into society for disabled people. We have identified also major risk factors that should be taken in account -- strong style of work traditions in the country, limited participation chances for people that are insufficiently educated, necessity for advancement of technological environment.

Installation of public Internet terminals and creation of technological/business centres, introduction of electronic transactions and remote financial services (televoting, Internet/mobile bank) is taking place. Development of a wide spectrum of remote public services, both for individuals and businesses (e.g., registration of new company, tax and customs declarations, public procurement, enrolment in educational institutions, etc.) is planned. Electronic documents and identification cards are being introduced as tools to implement remote contacts and transaction services, including finance, information, etc.

General participation – a principal precondition for smart development

In order to be successful, a developmental strategy must be understandable and acceptable for the whole society. Awareness must be formed that this strategy will be beneficial for everyone. And even more important, it is critically necessary to involve not only the elite of society in this process. A chance to participate in the process, to use the knowledge at work and in everyday life should be provided to everybody, every company in every region of the country, thus ensuring an increase in the welfare level. Upon decreasing the level of skills necessary for participation, precluding the remote effect, as well as involving the senior generation and people with special needs, it is possible to prevent the formation of the *knowledge rich* and the *knowledge poor* strata. At the same time, it is necessary to increase responsibility of every individual for himself/herself as a member of the society.

This is precisely the essence of the *Socio-economic Programme eLatvia*¹⁰. In order to facilitate sustainable development of Latvia and the increase in the welfare level for everybody the focus is on:

- encouraging the formation, spread and introduction the basic conditions, principles and processes of the knowledge-based economy, thus increasing the effectiveness and competitiveness of Latvia's national economy in the global market;
- creating opportunities for every individual and business to participate fully in the processes of the knowledge-based economy.

⁹ A concept for development of E-business (in Latvian). <http://www.lem.gov.lv>

¹⁰ Socio-economic Programme eLatvia. www.lem.gov.lv

Consequently, general access (complete, fast, easy) to information, ability to transform information into knowledge become necessary preconditions for the accomplishment of primary tasks – increase of economic activities, creation of new and well paid jobs, balanced regional development, equalisation of social and economic disproportions, creation of equal opportunities for education and satisfaction of social needs.

Cheaper, faster and secure connection to ICT infrastructure

An advanced technological infrastructure, high-quality connections to the information and telecommunications networks (fixed and mobile telecommunications, Internet and other data transmission, radio and TV broadcasting) for every individual and business in all of Latvia at affordable prices – these remain the basic preconditions for knowledge-based development (Table 5).

Table 5

Development of infrastructure (per 100 inhabitants), end 2001

Telephone main lines	30.6
Digital lines as % of main lines	68.6%
Mobile telephones	25.4
Personal computers	10.9
Internet hosts	2.7
Internet users	10.2
TV sets	89.1
Cable TV subscriptions	24.5
Satellite TV	10.1

The presently unacceptable low level of *Internet* availability is being improved. The market for telecommunications services will be liberalised completely accordingly to the EU principles in 2003 and it is expected that the availability (as related to penetration, quality and prices) of data transmission services will increase as a result.

In order to ensure an opportunity for the whole population to join the *Internet* users, focus on the group access has been accented – connection of all libraries, schools, municipalities to *Internet* and installation of public terminals. Particular attention will be paid to the remote and specifically supported regions.

The level of security in using the *Internet* also must be increased, especially for business and financial transactions. The telecommunications and *Internet* regulations (inclusion of *Internet* services into the set of universal services, the certification and liability of the information and service providers, the use of domain addresses as a scarce national resource etc.) are being implemented to ensure logic and physical protection of information services and resources. These activities are performed by a new-established multisectoral regulatory body – *Public Utilities Commission*.

General information literacy

For the development of Latvia in the 21st century, the crucial factor will be training of a highly educated, competitive labour force, the motivation of society to acquire knowledge and to create new knowledge. The availability of education for everyone and possibility of lifelong education (if an individual so chooses) is an important precondition for the cohesion of society.

Formation of the intelligent human and his competitiveness in the EU open job market, and development of initiative and enterprise are the main goals towards which the educational system's basic principle is directed – namely to learn how to turn information into knowledge, but knowledge – into prosperity. Everyone should be able to use information in his/her work and everyday life. There is an excellent basis nowadays for the further knowledge-based development – in Latvia there is the highest adult literacy rate in the world¹¹ (Table 6).

Table 6

General information literacy

Adult literacy rate as % of age 15 and above, 1999	99.8%
Primary, secondary and tertiary gross enrolment ratio, 2001	84%
Tertiary enrolment as % of gross enrolment, 2001/2002	21.6%
Tertiary enrolment in technical fields as % of gross tertiary enrolment, 2000/2001	16.5%
Electronic textbooks as printed equivalent of A4 pages, end 2001	80 000 pages
Teachers trained in IT usage, as % of total No. of teachers, end 2001	68%
No. of primary and secondary level students per PC, 2001	21.7

Latvia successfully continues a process of informatization of our schools¹². Design of computerised methodological materials and textbooks (on-line, on CD etc.) and training of teachers to use them are emphasized as the key factors, jointly with the development of infrastructure and connections to the *Internet*. Wide usage of advanced information technologies for learning physics, chemistry, mathematics, history, languages for primary and secondary education is one of the priorities of the national strategy, a large number of electronic textbooks and methodological materials has been prepared.

At the same time the *European Computer Driving Licence* is being introduced into school curricula as an objective confirmation on the ability of every school-graduate to use advanced technologies in his work.

Introduction of *information literacy* studies into high school curricula has started, teaching everyone to find the necessary information and to transform it into knowledge, thus awakening the interest of a person in lifelong learning. The introduction of distance learning, especially for post diploma and further education, for intensive courses and retraining gives everyone flexible educational opportunities irrespective of age, place of residence or social status.

¹¹ Human Development Report 2000. www.undp.org/hdro

¹² Latvian Education Informatization System. www.liis.lv

At the same time the situation is complicated by a generally fragmented state of the higher educational system, and by the insufficient contribution of universities toward the resolution of national priorities. Training the highest-skilled specialists (master's and doctor's degrees) in priority fields should be enlarged and improved. The proportion of programs in social sciences and humanities is excessive. The result is lack of engineers, import of specialists in high technologies, hypertrophied social programs.

Availability of information

Information must be available to every member of society, avoiding division into *information rich* and *information poor* people (Table 7).

Table 7

Availability of information

No. of public libraries per million population (excluding schools libraries), end 2000	432
No. of library users per million population (excluding schools libraries), end 2000	312 000
Libraries with Internet connection as % of total No. of libraries, end 2001	15%
No. of national and regional licensed radio broadcasting programmes, end 2001	37
No. of national and regional licensed TV broadcasting programmes, end 2001	29
No. of licensed cable TV broadcasters, end 2001	37
Daily newspapers per capita, 2000	76

Libraries are becoming the major suppliers of all types of information (scientific/technical, financial/business, educational/reference etc.) in the country, in every community¹³. The connection of all libraries to the unified information network, their interoperability with the national and international information systems and resources, the development of the electronic and virtual library ensure full opportunities to search and to receive both local and global information at every library. Information services are becoming available to remote users at work and at home.

An effective electronic mass media system provides comprehensive and objective information to the society in the whole country. Balanced development of and competition between public and private radio and TV systems is directed to avoid direct influence of political and economic authorities on public opinion. Transmission of digital TV will be started in the nearest future.

Public information processing and services

Public sector information ranks high among various types of information by its amount and significance. The public sector is producing and collecting vast quantities of various data in Latvia, it is the most important (and very often the single) collector and producer of information content. Private sector is active in provision of value added business information that also is based on the public sector information in a large measure. Ensuring access to well-

¹³ A Unified Libraries Information System (in Latvian).
www2.acadlib.lv/grey/informatikauntelekomunikacijas.htm

developed information services for everyone is envisaged as a tool for democratic development and functioning of the country and society.

A logically unified and technologically distributed information processing mega-system¹⁴ with a common data field as well as unified user's interface and access principles is being developed in Latvia to integrate the whole set of public information systems, to provide their interoperability and interchange of data (Fig. 3). All end-systems (various information systems, their remote data entry and access points, end-users of information) are being interconnected through a high-speed data communications network. The unified mega-system will be distributed to all regional and rural administrative centres, to any community.

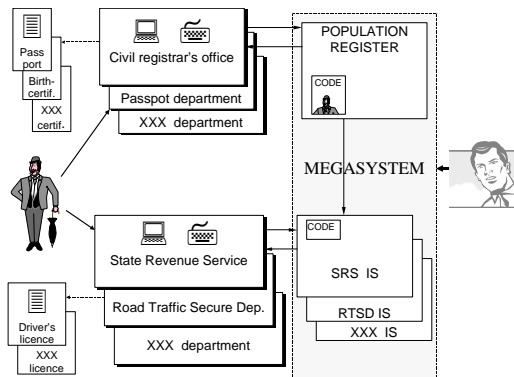


Fig. 3. The mega-system; data flows

This means that basic data entry and utilisation procedures are shifted to places where the information has been originated or exploited. It avoids duplication of records and coincidence of records in documents and databases. A central core of the mega-system provides information exchange among various information systems, meta-data on all components of the mega-system, a united and user-friendly access to information including handling requests that require processing data from various components. The mega-system is being interconnected with a national portal, thus ensuring a real base for development of all e-governance functions – informative, document, interactive and transaction levels.

Creation of the mega-system is not only a technological decision, in fact it first of all solving various informative, legal, organisational problems means

The number and informational value of the various kinds of local information sources are increasing rapidly, more than 60% of the total *Internet* traffic are within Latvian borders nowadays. Moreover, the outgoing traffic from Latvia is increasing rapidly. Our information is becoming more and more appealing for the international community.

Therefore all principles of the mega-system are being developed so as to allow for integration of Latvia's information systems into the Transeuropean corporate telematic networks (EBR,

¹⁴ The Mega-system; Conceptual and Methodological baselines (in Latvian).
www2.acadlib.lv/grey/informatikauntelekomunikacijas.htm

EuCaris, Eurostat, etc.). International expansion of the mega-system involves the creation of interfaces for international interconnection, while maintaining the basic principles of the mega-system. Such approach corresponds to fundamental principles of the IDA Programme, it is the basis for successful participation of Latvia in the Programme.

The Enterprise Register has been joined to the European Business Register in order to support international financial relations and investment processes, as well as business cooperation and foreign trade. The Vehicles Register has already been connected to European Car Register. A number of another national information systems are already participating in the activities of international systems.

Regional development

Regional policy as a substantial component of the general development policy is becoming extremely actual in connection with an increasing ability of regions to accomplish any activity without mediation of central authority. The development of all regions should be balanced in order to provide equivalent opportunities to jobs and education, to raise the welfare of whole population and to increase competitiveness of regions.

In Latvia there are no territories without opportunities for development, but the regional development nowadays is not balanced and significant socio-economic differences between regions exist – environmental and cultural nuances, differences in traditions, economic activities, employment, income level. A number of territories have been defined as specially supported areas according to specific criteria. Several rural territories have been long-time lagging regions, the support policy is being handed over to the respective regional assistance programs. Functioning and development of the borderland is more complicated – special security status, outskirts effect and in the same time improved opportunities for cross border cooperation. Economic development of protected areas is coordinated with systematical maintenance of the protected biotypes and territories. Latvia is becoming a monocentric state.

Diversification of economy in the rural areas should be viewed as an important condition for territorial development, such policy is envisaged by the long-term economic strategy.

Cities will become *crystallization centres* for development of the knowledge-based economy in the province. Formation of the *knowledge hubs* (university/college, technological/business/industrial centre, information centre/library) will be stimulated in cities as one of essential factors for development. The *Baltic Cyber City* project¹⁵ is an excellent example of a complex knowledge hub development. But it also includes business activities in the traditional branches (agriculture, as well as food, wood and light industry), which are modernized on advanced technological base, should be supported in all towns.

Towns should regain their another natural function – to be also the surrounding rural territory development centres providing mutual complement, diversified production, availability of services. Towns will play an important role in the establishment of rural infrastructure, support of business. They will also become rural intellectual centres providing all surrounding population the proper opportunities to education, knowledge development, information

¹⁵ The Project *Baltic Cyber City*. www.balticybercity.lv

services. Regional towns will improve significantly their possibilities to provide the basic social services – health and social assurance, cultural and recreational events.

Concentrated, specialised, productive and technologically advanced agrarian industry will dominate in the agriculture sphere, ensuring that whole population of the country is supplied with high quality food (including also from the viewpoint of security of the State and society) and that industry is provided with necessary raw materials. At the same time various forms of telework also will become commonplace in the rural territories.

Knowledge economy and social factors

In the context of economic policy the significance of social policy is constantly increasing. The final target of co-ordinated policy for economic and social development of the country and society is higher social and societal welfare level as a result of economic development, and knowledge becomes a critical precondition for its increase (Table 8).

Rights to education and health care are the primary values for everyone. Lifelong education, teletraining, telemedicine, social care online should become indicators of 21st century lifestyle.

Table 8

Welfare level and knowledge

Gini index, 2000	0.34
Unemployment rate, end 2001	7.7%
The rate of jobseekers, end 2001	13%
Tertiary graduated working age people as % of total working age, end 2001	19.4%
Tertiary graduated unemployment as % of total unemployed, end 2001	7.2%
Salaries of the employed in software industry as % of average salaries in the economy	177%

Investments in education, availability of education for everyone (if an individual chooses it) become extremely important factors in increasing the quality of human capital in Latvia. Training of a highly educated, competitive labour force on all levels (researchers, engineers, workers), the motivation of society to acquire knowledge will be the crucial factor for the development of Latvia in the 21st century.

Culture and language have traditionally been symbols of national identity, particularly for a small nation. The significance of culture in the process of development of a nation and national economy should not be underestimated. The processes of maintenance, development, functional perfection of national language – elaboration of terminology, use of national languages in systems of information processing – have been started.

Social and health care policy should integrate health care, treatment, health promotion and other services with the responsible activities of individuals and socio-economic factors. As the educational level increases, society will increasingly understand that social programs must be designed in conjunction with national economic possibilities, that it is necessary to increase responsibility of every individual for himself/herself as a member of the society.

Conclusion

Reduction of the general level of economic inactivity, active interpretation and schooling, and an increasing level of participation for everybody is the only possible way to achieve our goals in the foreseeable future, provided there is active, coordinated and interested liaison among public sector institutions, businesses and citizens. There is no doubt that the action model presented that involves all social strata will ensure the implementation of the mentioned development activities and the planned results will be attained.

Latvia's strategy and actions are based on implementation of a truly innovative approach, on exploiting in a full measure opportunities that are provided by increased knowledge potential, on revision of traditional procedures in any sphere of life and restructuring them, on expanding capability of every individual. Innovation means not only and not so much research and development of new products, it includes a modernised approach, newly formed methodologies, a modified mindset and style of activities. Qualitative changes will result – making industry and services more efficient, governance more effective, social policy more comprehensive. Maximal social and cost-benefit effects can be achieved only by performing these activities.

Through successful implementation of this policy the information society gradually will be developed in Latvia as a process of the development of a community of highly educated individuals and a knowledge-based economy.