

# Sustainable Building Area and Green Economy

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**Abstract.** There are often no easy answers to environmental and sustainable challenges in the way to Green economy.

Long-term building ideas developed in other countries known as sustainable building are becoming more popular also in Latvia. The development of sustainable building is stimulated with the help of many conditions: economic (necessity of saving resources and energy), social (market – tailored according to the needs of the consumers; high demand for the qualitative accommodations). In this paper the basic principles of sustainable building and management have been studied, as well as the relevant technical criteria have been analyzed. The paper provides recommendations for the improvement of the situation.

**Keywords:** long-term environmental development, green economy, sustainable building.

## I. INTRODUCTION

In the times of climate changes and globalization researches involving security of long-term environment, saving of the resources, as well as the preservation of the place's identity and singularity are activating. The concept long-term involves balancing of the environment's economic and social issues, maintaining balanced development. [1]

Economic activity always impacts the environment, but the potential degree of this impact will depend on several factors which are mainly determined by technology used. Assessing an economy's environmental impact on a country level, including such components as population, abundance and technology are analyzed.[2] Traditional building has addressed the environment in an imbalanced manner. Green Economics is an economics that can accept and integrate different positions on the world's big ideas such as those presented in *The New Scientist* [3], The Big Bang, Evolution, Quantum Mechanics, Risk Theory, New System Theory, Relativity, Climate Change and Tectonics. Green Economics fundamentally incorporates the ideas of progress in scientific thinking and in scientific methodology. It is open and able to explore new ideas which fundamentally change our perspective.[4]

Green jobs have become an emblem of a more sustainable economy and society that preserves the environment for present and future generations and is more equitable and inclusive of all people and all countries. But evidence shows that green jobs do not automatically constitute decent work. Many of these jobs are "dirty, dangerous and difficult". Employment in industries such as recycling and waste management, biomass energy and construction tends to be precarious and incomes low. If green jobs are to be a bridge to a truly sustainable future, this needs to change. [5]

The aim of long-term development is to secure continuous improvements of the quality of life and welfare for the existing and future generations. It is an essential goal of the European Union. However, rapid global changes, from the

melting of glaciers to the growing demand for the energy and resources, are making it difficult to reach the goal mentioned.

Also in the field of building, the task is to create a continuous cycle: to improve general ecological characteristic quantity of building products in the whole turnover cycle, to popularize and stimulate demand for building products and technologies and to help consumers to make the best choice with the help of more coordinated and more simple labelling [1]

## II. SUSTAINABLE BUILDING AND GREEN ECONOMICS

The world is changing; we are living in an age of global transformation: An age of Green Economics [6]. Nowadays, the word "green" becomes a catchphrase when it comes to modern and contemporary home building and concepts. There are different standards and qualifications that will make up an eco-friendly and green home that is the universal of what the word "green" is about.[7]

Green homes are greatly preferred by modern day home owners not only because of their environmentally friendly structure, but it is also a great way of qualifying for incentives and other compensations since almost all states are giving credits for homes and infrastructures.

Energy efficiency is the basic standard that must be manifested in the entire structure, foundation and concept of the house. This is shown in the increased insulation in the overall system. This includes insulation of the flooring system which is basic in some construction that builds the floor right into the structural and concrete foundation of the house. Energy efficiency is expected to be incorporated in the entire systems of the house that includes toilets that require low water usage. You can actually gain these types of equipment in local stores that offer different energy or water-saving features in their flush options for extra consciousness in ecology and water usage or disposal.[7] Table 1 shows the results of strategy planning and way to long-term building.

There are also other types of equipment which are given green standards, such as washing machines, faucets, shower heads and dish washers. These are equipped with the latest water-saving consumption system that allows usage of a limited supply of water without giving up the output of its function. For home interiors, it is best to consider natural fabric materials such as cotton and wool for home carpets and interior window dressings. Green homes are the most common and highly preferred trends in the contemporary real estate industry. [7]

As a Green Economy is innately a Sustainable Building, these requirements are relevant and help to explore the concept of Green Economy.

TABLE 1  
RESULTS OF STRATEGY OF LONG-TERM BUILDING

|                 |                         |
|-----------------|-------------------------|
| 1. Profits      | Long Term               |
| 2. Management   | Long Term               |
| 3. Jobs         | Short Term              |
| 4. Training     | Short Term              |
| 5. Compensation | Long Term or Short Term |

These requirements mandate that an effective Sustainable Building should be

- based on a democratic and shared understanding of the goals of a Sustainable Building;
- reflexive, adaptive, polycentric, holistic, and participatory; and,
- based on a sound understanding of human nature, collective human behaviour, and ecological principles.

Long-term building is stimulated with the help of many conditions: economic (necessity saving resources and energy), social (market – tailored according to the needs of the consumers; high demand for the qualitative accommodations), as well as the necessity to consider the environmental issues (taking responsibility for the diminishing of the climate changes and pollution), see table 2.

There are many advantages of the long-term building securing long-term development. (J. Brizga: Creating qualitative, environment-friendly, and health-friendly living space, ecologic, economic, and social sustainability is facilitated. It is a way of living environment and health friendlier, without giving up nowadays so common accommodations and quality standards, though at the same time thinking of the future of our children and grandchildren and rights living in clean, resources non-exhaust environment. Long-term building involves complex solutions and practice, that increases houses' efficiency, diminishing consumption of the energy, water and other natural resources, diminishing houses', their building and management processes' material input per unit, power-intensity and negative impact to the people's health and environment.

TABLE 2  
BENEFITS OF LONG-TERM BUILDING [1]

| Environmental benefits                          | Economic benefits  | Social benefits                                     |
|---|--|---|
| preservation of the ecosystem and biodiversity; | diminished building exploitation expenses;   | improved air quality;                               |
| raised air and water quality;                   | raised value added;  | raised comfort level and healthy living conditions; |
| less solid fuel;                                | support to the local manufacturers and economic;   | diminished spare load to the infrastructure;        |
| saving and non-exhausting natural resources.    | raised working productivity and employee satisfaction;                                     | higher quality of life.                             |
|   | improved economic (economy in the whole usage time) showings of the building's life cycle. |   |

It can be achieved choosing appropriate architectonic and constructive solutions, proper building location to optimize in the planning of the buildings, building, exploitation and demolition consumed and exploited resources, evaluating them complexly in the whole life (building, management, and demolition) cycle. [8]

### III. INTERNATIONAL AGREEMENTS ON CLIMATE CHANGE REDUCTION

Greens are not in favour of messing with the climate or atmosphere.

- Detailed regulation of banks and financial markets
- Partly nationalised
- Strengthening demand for public investment
- Sensible public projects -green ones
- Conversion to green technology
- Green jobs
- Sort out property market to end boom and bust – no scarcity and good supply
- Second house ownership tax disadvantages – changes to tax system for needs rather than investment
- Production factor labour not taxed but use of capital taxed – and consumption of non green items
- Short term stimulate economy [9].

At the United Nations Conference in Rio de Janeiro, 1992, sustainable development was announced as the way of social-economic questions balanced solution and environment protection.

UN climate change conference in Mexico, Cancun, was in 29.nov.-10.dec. 2010. Member States have agreed to fight global warming and developing countries to provide funds for a compromise in the fight against climate change, agreed, on a new document to combat global warming, which also includes Green Climate Fund for developing countries, where a significant proportion of the funding will go to fight climate change. [1]

Latvia has undertaken to fulfill its international commitment to global climate change by signing the UN Framework Convention on Climate Change (the Convention) in 1992 in Rio de Janeiro and the ratification of the *Saeima* in 1995.

The Convention aim is to achieve greenhouse gas (GHG) concentration in the stabilization of the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

January 23, 2008, the European Commission published the Climate Energy Package and the related documents. The package includes the following laws and regulations [10]:

1. Emissions Trading Scheme (ETS) Directive Statement;
2. The decision to reduce emissions in sectors not covered by the ETS;
3. Renewable project;
4. The draft directive carbon capture and storage and impact assessment.

The future of construction is facing serious challenges – resource supply, energy efficiency and unhealthy buildings to name but three. The real challenge facing us is essentially a dual challenge – energy and livability.

The EU has adopted a comprehensive package for European energy policy up to 2020. It entails that EU member states are

to reduce their total energy consumption and CO<sub>2</sub> emissions by 20%. Moreover, all EU member states must document that 20% of their total energy consumption comes from renewable energy sources. [11]

Relatively good environmental situation and huge current economical and social problems in Latvia have resulted in a situation where the main attention of political and mainstream research is devoted to social and economic problems, such as unemployment, reduction of GDP, inflation or deflation, exchange rate, poverty reduction etc. It is somehow understandable that governments neglect environmental issues during the periods of economic downturn. On the other hand, the economic downturn can be used as a starting point for making considerable changes in economy and people's behaviour, paying more attention to the environmental constraints. Economic policy cannot neglect paying attention to such problems as resource exhaustion, biodiversity extinction and depletion of ecosystems, climate change, pollution and many more. Basically there are two ways of approaching these problems - to develop an economic policy that incorporates the main principles of Green economics and to change the consumption patterns of population. [12] Latvian national policy documents are:

1. Latvian National Development Plan 2007-2013 year. Sustainable development is defined as the social, environmental and economic factors of employment;
2. Construction industry guidelines for 2011-2015: "The main task of Guidelines is to establish policies for sustainable and competitive construction industry development";
3. Construction sector policy framework; one of the six principles of environmentally sound, competitive and sustainable construction principles;
4. Construction Law Project. One of the four fundamental principles of sustainable construction principles;
5. Recommendations for the promotion of environmentally friendly construction, approved by Cabinet, 22.12.2008.;
6. Environmentally-friendly procurement manual;
7. European Parliament and Council Directive 2008/98/EC of 19.11.2008., on waste and repealing certain Directives;
8. European Parliament and Council Directive 2010/31/EK 19/05/2010., on buildings;
9. Energy management system EFT EN ISO 16001, from 2011
10. There are Founded a new association - the Latvian Council of sustainable construction.

Gender and equity among all people everywhere Access to economics decision making for all [9].

#### IV. MODEL "HOME 2020"

In order to find solutions to the challenges of climate change and livability, we need to examine a future model that addresses them as a holistic solution.

The ultimate objective of future construction and subsequent use of a building is taken into account in the design phase; it should employ modern technology and visionary design to create an efficient building envelope without compromising the highest standards of comfort and health; and it should have the lowest possible impact on the climate by using renewable energy sources and adopting the concept of climate payback.

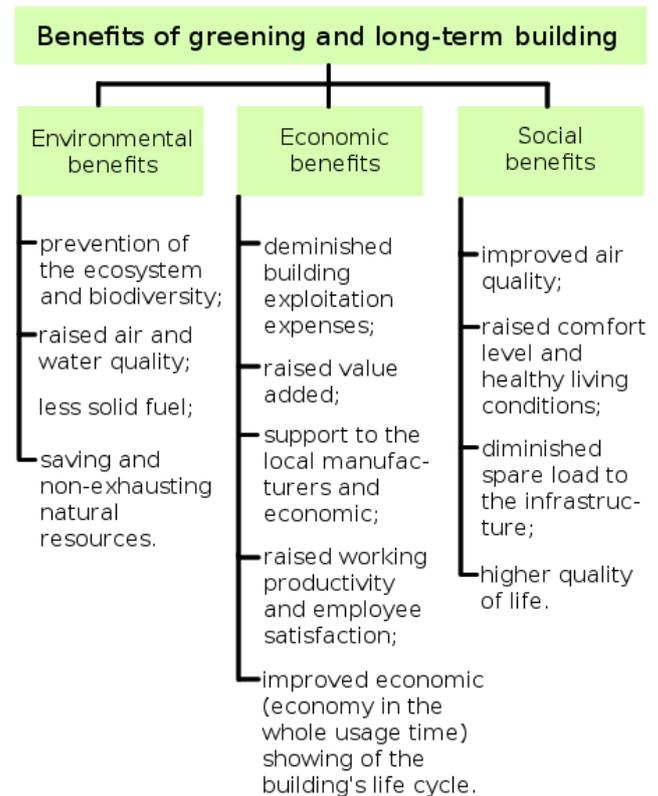


Fig. 1. Benefits of "greening" and long-term building

In the EU today, we spend 90% of our time indoors, in buildings that consume over 40% of the total energy consumption. Up to 30% of the building stock does not contribute to nor provide a healthy indoor climate. Looking into a future perspective of how we construct and renovate buildings, it is necessary to consider climate changes, recourse supply and human health. [1]

The benefits of measures to make long-term building and green economy aspects see in Figure 1.

#### Energy challenge

Considering the total energy consumption throughout the whole life cycle of a building, the energy performance and energy supply is an important issue in the concern about climate changes, security of supply and reduced global energy consumption.

#### Environment challenge

Although the challenges we face are global, the local environment, which always has unique features, must be considered carefully. An open-minded approach to flexible solutions that take into account local cultural and infrastructural differences creates a cleaner environment with less pollution and waste, each time reflected in the best solution for the specific context.

#### Indoor climate challenge

People spend 90 % of their time indoors, but less than 30% of the building stock contributes to or provides a healthy indoor climate. Humans need comfortable conditions including thermal conditions, fresh air and daylight when they indoors. These factors have a positive effect on our health and well-being as well as our ability to perform.

The real challenge facing us is essentially a dual challenge – the energy challenge and the livability challenge. Six main criteria have been identified as the most important for the energy design and livability criteria of the project Model Home 2020 experiments by specialists of WELUX Group. Main energy design and livability criteria of the Model Home 2020 experiments are [13]:

1. Energy consumption targets.
2. Low-energy standards.
3. Optimized design.
4. Highest energy marking.
5. Intelligent energy performance control.
6. Documentation of embodied energy.

It means: maximized daylight availability, highest daylight levels, strategic window positions, healthy indoor climate, automatic control of natural ventilation, stack effect/chimney effect, sound materials.

#### V. PROBLEMS OF BUILDING SECTOR OF LATVIA

Compared to 2009, the construction volume at constant prices in 2010 has reduced by 23.6%. Of which construction of buildings has decreased by 24.9% and volume of civil engineering structures constructed – by 22.3%. [14]

TABLE 3

CONSTRUCTION VOLUME THSD LATS (AT CURRENT PRICES) [14]

| Year | 1st quarter | 2nd quarter | 3rd quarter | 4th quarter | Total   |
|------|-------------|-------------|-------------|-------------|---------|
| 2008 | 300141      | 460419      | 532716      | 475199      | 1768475 |
| 2009 | 203514      | 277839      | 288112      | 249457      | 1018922 |
| 2010 | 107145      | 173991      | 247502      | 228904      | 757442  |

Table 3 shows that compared to the 3rd quarter of 2010, construction volume in the 4th quarter of 2010 decreased by 5.5%, according to seasonally adjusted data at constant prices. Of which the construction of buildings diminished by 6.6% and volume of civil engineering structures constructed have grown by 1.5%. [14]

In 2010 construction volume (at current prices) comprised LVL 757.5 million, of which in the 4th quarter – LVL 228.9 million, according to the data of Central Statistical Bureau, see figure 2.

Compared to the 4th quarter of 2009, construction volume in the 4th quarter of 2010 has decreased by 9.6%, according to working day adjusted data at constant prices. Of which

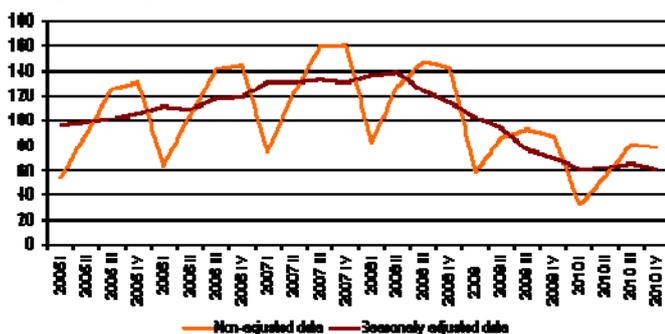


Fig. 2. Construction volume index (2005 = 100)

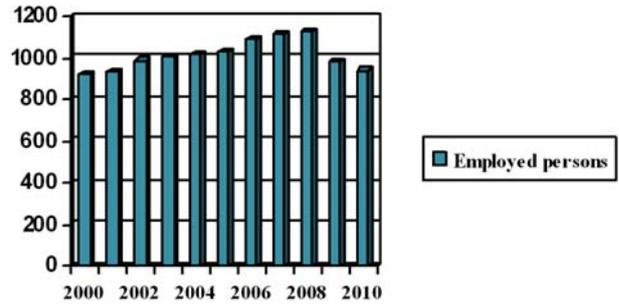


Fig. 3. Employed persons in Latvia

construction of buildings reduced by 6.1% and volume of civil engineering structures constructed – by 11.9%

If compared to the corresponding period a year before, the most notable reduction of construction and repairs was observed in construction of office buildings and in construction of bridges – by 63.4% and 47.6%, respectively. But growth of construction volume, in turn, was recorded in construction of wholesale and retail trade buildings and in construction of industrial buildings and warehouses – by 123.6% and 56.4%, respectively. [14]

In 2010 construction management authorities granted 1725 building permits for the construction, capital repairs, reconstruction and restoration of single dwelling buildings with total floor space 378.6 thousand m<sup>2</sup> (in 2009 – 2110 and 427.7 thousand m<sup>2</sup>, respectively). 295 building permits were granted for the construction of production buildings and warehouses with total floor space 536.5 thousand m<sup>2</sup> (in 2009 - 198 permits and 299.0 thousand m<sup>2</sup>, respectively).

In the 4th quarter of 2010, 326 building permits were granted for the construction of single dwelling buildings with total floor space 75.9 thousand m<sup>2</sup> (in 4th quarter of 2009 – 405 and 83.1 thousand m<sup>2</sup>, respectively). 105 building permits were granted for the construction of production buildings and warehouses with total floor space 153.1 thousand m<sup>2</sup> (in 4th quarter of 2009 - 56 permits and 77.0 thousand m<sup>2</sup>, respectively).

In 2010 1095 building permits were granted for the construction of new single dwelling buildings with total floor space 244.2 thousand m<sup>2</sup> (in 4th quarter of 2010 – 197 and 47.7 thousand m<sup>2</sup>, respectively) and 179 permits were issued for the construction of new industrial buildings and warehouses with total floor space 332.5 thousand m<sup>2</sup> (in 4th quarter of 2010 – 69 and 100.7 thousand m<sup>2</sup>, respectively).

#### VI. RESULTS AND DISCUSSION

Results of housing demand qualitative changes are:

1. In the short-term period – a rise of prices for houses in a sector with new standards, later a rise of prices in all housing sectors; stopping replenishment and construct of small-sized and social housing.
2. In long-time period – surplus of housing, including houses not corresponding to the market demand; falling of the prices in the sector with new standards and, further, in all sectors of housing.

## VII. CONCLUSIONS

Suggestions for proximate period in the building sector to reduce problems in Latvia:

1. the necessity to reduce bureaucracy caused barriers in building sector.
2. to arrange legislative foundation, especially in relation to building standards.
- 3 Further simplifying the EU funds procurement procedures for state or local governments that paid for constructive advices during the project;
5. Provide with the strong level of building competition process and the control results as well as change of the fundamental principles of competition, so it doesn't leave the construction cost as the only evaluation criterion.
6. Carrying out public procurement in accordance with the Public Procurement Law or public service provider procurement law, competition regulations to incorporate sustainable building assessment criteria;
7. To accomplish a very skilled expertise in documentation preparation stage, provide clients with the high quality regulation of competition;
8. To develop very precise technical specifications and contract documentation, which are included into project and comprise information on the construction materials and construction specifications as well as the detailed work organization and cost calculations (estimate). If the names and parameters of used materials and mechanisms are not specified in work description; the contractor's offer generates distrust, as well as gives a serious effect on projects evaluation;
9. Choose the most economically advantageous tender selection criteria;
10. Raise the level of competence of a tender evaluation commission in the construction industry, as well as in the related laws, the Cabinet of Ministers and other standards.
11. Economic activities always affect the environment. The strategy of sustainable development is based on the dematerialisation concept – provision of a certain welfare level, at the same time reducing the consumption of materials and energy. Latvia as the European Union Member State has a duty to implement the policy that provides guidelines for the elaboration of sustainable development principles, while the government, in its turn, has to ensure the monitoring of the implementation of these principles. Environmentally friendly economic activities have to be grounded on accurate long term cost, impact and benefit assessments and calculations.

## REFERENCES:

- [1] Gusta S. Building as a Long term Environmental Development and Preservation Condition // LUA Faculty of Rural Engineering Department of Architecture and Building, Department of Structural

### Sandra Gusta, Dzintra Atstāja. Ilgtspējīga būvniecība un zaļā ekonomika

Bieži vien ir grūti formulēt kādas nozares priekšrocības, virzībā uz zaļo ekonomiku.

Idejas, kas pasaulē pazīstamas kā "ilgtspējīgā būvniecība", kļūst arvien populārākas arī Latvijā. Pasaule mainās, mēs dzīvojam pārmaiņu laikā. Zaļā domāšana kļuvusi par koncepciju, līdz ar dažādu standartu un prasību ieviešanu videi draudzīgos risinājumos, zaļajā būvniecībā un ekodizainā. Parasti to nosaka vairāki ilgtspējīgas attīstības priekšnosacījumi: ekonomiskie (nepieciešams taupīt vai atkārtoti izmantot resursus un enerģiju), sociālie (tirgus nosaka augstas prasības, mainās patērētāja izvēle, mainās prasības attiecībā uz piedāvāto komfortu un kvalitāti ēkām, naktsmītnēm u.c.), kā arī vides jautājumu aktivizēšanās (uzņemoties atbildību par klimata pārmaiņām un piesārņojuma samazināšanu).

- Engineering, Civilengineering'11 International scientific conference Abstracts, Jelgava 2011.- 67.lpp.
- [2] Dimante, D., Atstāja, D. The economies of the Baltic Sea Region in relation to green economics, with particular focus on Latvia: environmental sustainability and well-being', *Int. J. Green Economics*, Vol. 4, No. 3, pp.292–305. 2010
- [3] Kennet, M. Green Economics: setting the scene. *Int. J. Green Economics*, Vol. 1, Nos. 1/2, 2006
- [4] Bruksle, I., Atstāja, INOVÁCIA EKONOMICKÝCH TEÓRIÍ AKO CESTA K TRVALO UDRŽATELNÉMU ROZVOJU, Význam ľudského potenciálu v regionálnom rozvoji - 2. ročník, pp 23 – 39, EEDA, Dudunec, Slovenska republika, 2011.
- [5] Green Jobs:Towards decent work in a sustainable, low-carbon world  
[http://www.unep.org/labour\\_environment/PDFs/Greenjobs/UNE P-Green-Jobs-Report.pdf](http://www.unep.org/labour_environment/PDFs/Greenjobs/UNE P-Green-Jobs-Report.pdf)
- [6] Kennet, M., The costs of climate change economics, *International Journal of Green Economics*, VOI 3 issue 3 and 4 Inderscience Publishers, 2009
- [7] <http://www.seenonrealestate.com/real-estate/features-to-qualify-as-green-home> Accessed on 21st August, 2011
- [8] Brizga, J., *Zaļā iepirkuma rokasgrāmata*. Celniecības un būvniecības darbi. Rīga, Biedrība "Zaļā brīvība", 2010., 18-30 p. (in Latvian)
- [9] Kennet, M., *Green Economics*. Harvard College Economics Review. Volume II, Issue 1. December 2007.
- [10] Proposal for a Community Lisbon Programme 2008-2010 – COM (2007) 804 – Accessed on January 24, 2011: [http://www.ec.europa.eu/legislation\\_summaries/employment\\_and\\_social\\_policy/growth\\_and\\_jobs/c11804\\_en.htm](http://www.ec.europa.eu/legislation_summaries/employment_and_social_policy/growth_and_jobs/c11804_en.htm)
- [11] Renewed EU Sustainable Development Strategy, Council of the EU 10917/06. Accessed on January 24, 2011: [http://www.ec.europa.eu/sustainable/docs/renewed\\_eu\\_sds\\_en.pdf](http://www.ec.europa.eu/sustainable/docs/renewed_eu_sds_en.pdf)
- [12] Dimante, D., Atstāja D. „Perspectives of Green Economics in Latvia”, Proceedings of the 3<sup>rd</sup> International Scientific Conference „Solutions on Harmonizing Sustainability and Nature Protection with Socio-economic Stability” of Vidzeme University of Applied Sciences and Nature Conservation Agency North Vidzeme Biosphere Reserve of Valmiera, 19-20 August, 2010, pp 45.-52
- [13] [http://www.velux.com/sustainable\\_living/model\\_home\\_2020/newsletter/default.aspx](http://www.velux.com/sustainable_living/model_home_2020/newsletter/default.aspx) - Accessed on July 24, 2011.
- [14] LR CSB data base, available at : <http://www.csb.gov.lv/> (Accessed on May 12, 2011.)

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Samērā labs apkārtējās vides stāvoklis un pašreizējos ekonomiskajos apstākļos samilzušās sociāli ekonomiskās problēmas Latvijā ir radījušas situāciju, ka politiķu un pētnieku galvenā uzmanība ir pievērsta sociāli ekonomisko problēmu risināšanai, tādām kā bezdarbs, IKP samazināšanās, inflācija un deflācija, nabadzības samazināšana u.c. Tas it kā būtu saprotami ekonomikas lejupslīdes apstākļos, tomēr, no otras puses, ekonomisko lejupslīdi varētu izmantot kā sākumpunktu, lai paveiktu nozīmīgas izmaiņas ekonomikā – pievērstu cilvēku uzmanību vides ierobežojumiem, resursu izsmelšanai, bioloģiskās daudzveidības samazināšanās klimata maiņu rezultātā, piesārņojuma u.c. jautājumiem. Tie varētu būt divi pamatvirzieni, ko varētu risināt valdības līmenī – ekonomikas politikā iestrādāt zaļās ekonomikas pamatprincipus vai mainīt iedzīvotāju patēriņa modeli.

Latvijas valsts politikas dokumentos ir iestrādāti vides politikas pamatjautājumi, energoefektivitātes kritēriji un vides aspektu novērtēšana. Raksta mērķis ir raksturot būvniecības nozares situāciju valstī, ilgtspējīgas būvniecības un zaļās idejas, modeli "Māja 2020". Autores meklē rekomendācijas apsaimniekošanas pamatprincipiem, tehnisko kritēriju analīzei un situācijas uzlabošanai.

#### **Сандра Густа, Дзинтра Атстая. Устойчивое строительство и зеленая экономика**

Часто бывает трудно сформулировать преимущество какой-либо отрасли промышленности с точки зрения зеленой экономики.

Идеи, которые во всем мире известны как «устойчивое строительство», становятся все более популярными и в Латвии. Мир меняется, мы живем в эпоху перемен. «Зеленое» мышление стало понятием, с различными стандартами и требованиями для внедрения экологически чистых решений, зеленого строительства и эко-дизайна.

Относительно благоприятная экологическая ситуация и огромные экономические и социальные проблемы в Латвии привели к ситуации, когда изменилась расстановка политических сил, и больше исследований посвящено социально-экономическим проблемам: безработице, сокращению ВВП, инфляции или дефляции, обменному курсу, сокращению бедности и т.д. Вопросы охраны окружающей среды в период экономического спада, с другой стороны, могут быть использованы в качестве отправной точкой для принятия существенных изменений в экономике - уделять больше внимания экологическому ограничению. Экономическая политика не может пренебрегать проблемами Суха, такими, как истощение ресурсов, биоразнообразие вымирания и разрушение экосистем, изменения климата, загрязнения окружающей среды и многое другое. Есть два способа - это разработка экономической политики, которая включает в себя основные принципы зеленой экономики и изменение структуры потребления населения.

Как правило, устойчивое развитие определяется целым рядом предпосылок: экономические (необходимость сохранить или повторно использовать ресурсы и энергию), социальные (высокие требования рынка, изменения в потребительском выборе, изменение требований комфорта, качества зданий, жилых помещений и т.д.), а также экологические (принимать на себя ответственность за изменение климата и сокращение загрязнения). Документы Латвийской национальной политики были включены в экологическую политику основных критериев энергоэффективности и экологической оценки.

Цель статьи - описание ситуации в строительной отрасли, устойчивое строительство и зеленые идеи, модель "Дом-2020". Авторы предлагают рекомендации по принципам управления, технических критериев анализа и улучшения ситуации.