# NOVA EKONOMIJA I DRUŠTVO ZASNOVANO NA ZNANJU: U SVETLU KONCEPTA ODRŽIVOG RAZVOJA*

# KNOWLEDGE - BASED NEW ECONOMY AND SOCIETY: WITH REGARDS TO THE SUSTAINABLE DEVELOPMENT CONCEPT*

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## REZIME

*Ako je ekonomija zasnovana na znanju tajna savremenog društvenog razvoja, onda nema dilema o tome koji proizvodni faktor je dominantan u današnjoj strukturi i kompoziciji izvora ekonomske aktivnosti i napretka. Informacija je deo znanja i saznanja koji se proteže na mnogo širu oblast društverne stvarnosti nego što je tek zbirna ekonomska aktivnost merena brutodomaćim proizvodom. Svojevremeno nove teorijske sintagme kao što su „postindustrijskoko društvo" „informatička era" (Danijerl Bel) ili, čak, „postkapitalističko društvo" (P. Drucker) samo su različite refleksije iste ideje i stvarnosti.*

*Osnovna poruka tih teorija bila je da za rast i razvoj nisu odlučujući materijalno i energetski obimne operacije, masa sredstava i materijalne tehnologije, već upravo obrnuto. U današnjem ekonomskom sistemu u sve manjim materijalnim razmerama koncentrisana je sve veća dodata tržišna vrednost. Ona se ostvaruje u najvećoj meri znanjem, ali i osposobljavanjem ljudi da ga generišu, prenose i koriste. Tehnologije u savremenom značenju, predstavljaju spoj zanata, umeća, i nauke, odnosno primenjeno znanje na tehnike proizvodnje i potrošnje, kao i na sve oblike društvenog života. One su danas sve više zasnovane na disperziji znanja, uključujići i nauku, a sve manje na pukoj veštini i materijalima.*

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## SUMMARY

*If knowledge-based economy is the actual secret of modern social development, then there is no dilemma regarding which production factor is dominant in today's structure and composition of the sources of economic activity and progress. The information is a part of knowledge and cognition that covers a much wider area of social reality than an aggregate economic activity as measured by Gross Domestic Product. Once new theoretical phrases such as "Post-industrial society", "computer era" (Daniel Belle), or even "post-capitalist society" (P. Drucker) are simply different reflections of the same idea and reality.*

*Basic message of those theories was that material and energy-demanding operations, scope of material and material technologies were not the crucial factor for growth and development, but quite the opposite. In today's economic system, in constantly decreasing material exchange a continuously increasing market value is added. It is mainly achieved by knowledge, but also by training people to generate, transmit and use it. Technology in the modern sense represents a combination of craft, skill, and science, i.e. applied knowledge in the techniques of production and consumption, as well as on all forms of social life. They are now increasingly based on the dispersion of knowledge, including science, and less on sheer skill and materials.*

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*Tzv. postsocijalističke zemlje, za koje se još uvek govori da su „u tranziciji" ka nekom novom drugačijem sistemu proizvodnje i društvenih vrednosti, najvažniji korak u tom velikom prelazu mogle bi da prevale razumevanjem, usvajanjem i institucionalnom organizacijom ekonomski zasnovanoj na znanju.*

**Ključne riječi:** proizvodni faktori, ekonomski razvoj, savremene i tradicionalne tehnologije, organizacija znanja, informacije, tranzicija, reforme zemalja JIE

*The so-called post-communist countries, which are still considered as being "in a transition process" to a new, different system of production and social values, could overcome the most important step in such great transition by understanding, acquisition and institutional organization economically based on knowledge.*

**Keywords:** production factors, economic development, modern and traditional technologies, knowledge organization, information, transition, reform of SEE countries

## EKONOMIJA ZASNOVANA NA ZNANJU KAO NOV NAČIN RAZMIŠLJANJA

Prava eksplozija sektora usluga i njihova disperzija, sa jedne strane, kao i promena odnosa uloga poslovnog i javnog sektora, posebno rast nevladinog sektora, civilnog društva, predstavljaju promene koje sve više oblikuju ne samo današnji privredni život već i ekonomsku budućnost ljudi. Pri tome treba imati u vidu da se „...nova svetska privreda odlikuje radikalno drugačijim sistemima poslovanja, od kojih mnogi nemaju veze sa internetom i uskim konceptom 'nove ekonomije' koji je postao njen deo. Nova svetska privreda je pre *nov način razmišljanja koji su omogućili privredna i tehnološka revolucija*." (Rišar, 2008, str. 39).

Iz toga nikako ne bi trebalo izvlačiti zaključke da su ostali faktori kao što su kapital (finansijski, ljudski, prirodni) infrastruktura ili prirodni resursi nebitni. Šta više, prethodno ostvarena sve snažnija dominacija proizvodnje usluga umesto dobara, pokazalo se, u vreme ekonomskih kriza učinila je mnoge ekonomije u većoj meri ranjivim na finansijske stresove, monatarne krize, kao i na generalni pad tražnje. Zaposlenost u ekonomiji zasnovanoj na znanju lako može da se poremeti, a pojedine usluge brzo da se pokažu kao manje-više nepotrebne, u stanju smanjenja dohotka ili pesimističke percepcije neposredne budućnosti. Upravo takve tendencije oborile su ekonomsku aktivnost

## KNOWLEDGE BASED ECONOMY AS A NEW METHOD OF THINKING

An "explosion" of the service sector and its dispersion on one hand, and changes in the balance of business and public sector, particularly regarding the growth of the NGO sector and civil society, represent the changes that increasingly mould not only the today's economy life but also the economic future of people. It should be borne in mind that "... the new world economy is characterized by a radically different business systems, many of which have nothing to do with the Internet and the narrow concept of the 'new economy' that has become its integral part. The new global economy is rather *a new way of thinking that made possible the economic and technological revolution.*" (Rišar, 2008, p. 39).

Certainly, the above statement should not be used to draw the conclusions that other factors, such as resources (financial, human, natural) or infrastructure are irrelevant. Moreover, the previously established, increasingly potent domination of service production instead of goods during the economic crisis has, as it turned out, made many economies more vulnerable to financial stress, monetary crises, and to a general decline in demand. The employment in a knowledge-based economy can easily be disrupted, while certain services may quickly prove to be more or less redundant, in order to reduce the income or a pessimistic perception of the near future. Such tendency brought reduced eco-

u većoj meri nego što se očekivalo u prvom (2009) kao i u drugom talasu krize koji je, posebno pogodio Evropu počevši 2011. godine, sa slabim izgledima da se okonča tekuće godine.

*Fleksibilizacija* ekonomske strukture, radnog vremena, drugačija struktura ekonomskih faktora – to je nova činjenica koja je dobila i poseban sadržaj tokom globalne ekonomske krize. Zemlje, koje su u strukturi svog BDP imale veće učešće materijalne proizvodnje, industrije ili koje su sopstvenu ekonomiju i izvoz u većoj meri zasnivale na prirodnim resursima (kao što su zemlje BRIKSA), pokazalo se, bile su otpornije na globalne krizne tokove i izazove finansijsih turbulencija.

Još jedna bitna činjenica od značaja na ekonomsku aktivnost dolazi do izražaja uprkos izmenjenoj strukturi ekonomije koja se zasniva na znanju. Naime *prirodni resursi* naročito energenti, kako neobnovljivi tako i obnovljivi, kao i obradivo zemljište, vodotokovi itd. u današnjoj ekonomiji postaju sve značajnija pretprostavka razvoja. Naravno ne i dovoljna.

Naime, ako je nekada obilje prirodnih izvora važilo za preovlađujući faktor, moderna epoha tehnologije i sve većeg oslonca na znanje, naročito u drugoj polovini XX veka, relativizovala je prirodni faktor. Međutim, narasli energetski problemi, zagađenje i degradacija životne sredine, kao i oskudica većine prirodnih resursa (nedovoljnost obradivog zemljišta, kvalitet i raspoloživost vode, šuma itd.) ponovo postaju veoma urgentni za ljudsku populaciju, pa i njen opstanak i (održivi) razvoj. Sledeće bitne činjenice uslovljavaju ovakvo stanje:

1. jedna je *eksplanzija ljudske populacije* koja je u prvoj deceniji XXI veka već, prešla preko 7 milijardi sa velikim izgledima da dostigne 9,5 milijardi do 2040. godine. Međutim, projekcije Rimskog kluba govore da bi maksimum oko 2040. godine mogao da iznosi samo nešto preko 8 milijardi, nakon čega bi globalna populacija neko vreme stagnirala i onda počela

nomic activity more than initially expected in the first (2009) and in the second wave of the crisis that particularly struck Europe in 2011 and with little prospect to end by the end of the current year.

*Flexibilisation* of economic structure, working hours, a different structure of economic factors - it is a new fact that got a special content during the global economic crisis. The countries that, in the structure of their GDP had an increased share of material production, industry or which mainly based their own economy and exports on natural resources (such as BRICS countries), were, as it turned out, more resistant to the global crisis trends and challenges posed by financial turbulence.

Another important fact of importance for the economic activity is accentuated despite the modified structure of the knowledge-based economy. The *natural resources*, particularly energy sources, both of non-renewable and renewable energy, as well as arable land, water flows, etc. are becoming increasingly important development factor. Of course, not completely sufficient by itself.

Namely, although the abundance of natural resources was used to be considered as the predominant factor, the modern era of technology and the increasing reliance on knowledge, particularly in the second half of the 20th century, relativized the natural factor. However, increased energy problems, pollution and environmental degradation, as well as the lack of most natural resources (insufficient arable land, bad quality and lack of water, forests, etc.) are, once more, becoming extremely important for the human population and its survival and (sustainable) development. The following important facts cause such situation:

1. the first one being the *rapid expansion of the human population* in the first decade of the XXI century. The world's population has already exceeded the 7 billion mark, with great prospects to reach 9.5 billion by 2040. However, the estimate made by the Club of Rome says that a maximum of just above 8 billion people would be reached by 2040, followed by a stagnation and later deteriora-

lagano da opada.[1] Bez obzira na smanjenje globalne stope priraštaja stanovništva, kao i kontroverze na drugoj strani oko depopulacije i starenja stanovništva jednog dela Planete, demografski faktor sve više potencira značaj ograničenih prirodnih resursa;

2. druga bitna činjenica je *rast ljudskih potreba i način njihovog zadovoljavanja*, koji zahteva sve više materijalnih potrošnih dobara i energije po stanovniku. To je višestruki izazov, koji se tiče održivosti kako prekomerne upotrebe prostora i prirodnih resursa tako i degradacije životne sredine (Goodstain, 2003, str. 37-86; Kanton, 2010, str. 158; Đukić, 2011, str. 147);
3. treći faktor su *klimatske i druge promene* koje smanjnuju izdašnost zemlje i drugih prirodnih resursa za sve veći broj ljudi. Na taj način preostaje da se globalna ekonomija bitno restrukturira i pripremi za nove ogromne troškove globalnog otopljenja, sadržane u problemima migracija priobalne populacije, vodosnabdevanja, hrane, klimatizacije (Đukić, 2011a, str. 11-40).

Sve u svemu, treba verovati da će prirodni faktor opstanka i razvoja čoveka u ekonomskoj aktivnosti dobijati na značaju. Međutim, tu se krije još jedna bitna odrednica za situiranje ekonomije znanja. Naime, prirodni faktor može biti od manje ili veće koristi za neku populaciju samo u kombinaciji prirodnih resursa i odgovarajućih sposobnosti za postupanje sa njima. Znanje kao faktor ekonomije i svih ostalih faktora doprinosi boljem i efikasnijem korišćenju prirodnih prednosti, posebno vode, ze-

1 Rimski klub je 1972. godine, objavio studiju „Granice rasta“. Više puta je iznosio svoje prognoze i viđenja razvoja čovečanstva. U najnovijem izveštaju pod naslovom „2052“ tvrdi se da će globalni rast svetskog stanovništva početi da stagnira ranije nego što se očekivalo, usled dramatičnog smanjenja broja novorođenih u gradskom stanovništvu. Broj stanovnika naše planete će 2040. dostići najviši nivo sa 8,1 milijardom ljudi, a zatim će početi da opada, a „svetski bruto domaći proizvod će takođe rasti sporije nego što se očekivalo, jer će se smanjivati i rast proizvodnje” (The Club of Rome, 2012).

tion of the global population.[1] Regardless of the decrease in the global rate of population growth, as well as of the controversies arising in respect to the depopulation and aging population of one part of the planet, the demographic factor increasingly accentuated the importance of limited natural resources;

2. the second important fact is *the growth of human needs and ways to fulfil them*, which require more tangible consumer goods and energy consumption per capita. It is a multiple challenge that concerns sustainability both of the excessive use of land and natural resources and environmental degradation as well (Goodstain, 2003, p. 37-86; Kanton, 2009, p. 158; Đukić, 2011, p. 147);
3. The third factor is c*limate and other changes* which reduce the land yield and other natural resources for the constantly growing population. What remains is to significantly restructure the global economy and prepare for new great cost of global warming, contained in the migration problems of coastal populations, water, food and air conditioning (Đukić, 2011a, p. 11-40 ).

All in all, it is to expect that the natural factor of human survival and development in the economic activities shall gain in importance. However, there lies another important determinant for the positioning of the knowledge economy. Namely, the natural factor can be more or less useful for a population only if used in a combination of natural resources and corresponding abilities for their handling. Knowledge as an economical factor and a constituent part of all the other factors contributes to a better and more efficient use of natural resources, especially water, land,

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mljišta, energije, prostora, biodiverziteta... S tim u vezi, poseban značaj na dugi rok ima *ekološko znanje i kapacitet zajednice i okruženja* da generišu održivi razvoj, u kome čovek i njegova zajednica mogu da smanje ekološki pritisak i podrže ekološku ravnotežu proizvodnih i ostalih procesa života, ljudi i ekosistema. U najužem smislu ekologija, kao nauka o odnosu živog sveta prema životnoj sredini, ondnosno o ekosistemima u širem smislu, dakle i o društvu, odnosno prirodnoj i društvenoj ekonomiji, u velikoj meri pomaže ljudima da prebrode teškoće poremećaja lanaca života i ishrane, energetskih bilansa, voda, zemlje i staništa (Bibi & Brenan, 2008, str. 365).

## ZNANJE KAO PRODUKTIVNI FAKTOR U TEORIJSKOJ EKONOMIJI

Od Adama Smita, rodonačelnika moderne ekonomske misli, pa na ovamo, teorija proizvodnje ekonomske vrednosti i strukture proizvodnih faktora u stalnom su preispitivanju. Jedan deo novih ideja treba pripisati ideologijama, ali se mnoge brže i značajnije promene u razumevanja produktivnosti i tržišnih vrednosti dešavaju upravo kao rezultat napretka tehnologije, tržišnih struktura, razvoja potreba i specifičnosti odnosa prema prirodi i životnoj sredini (Drucker, 1995; Kanton, 2009).

Naime, od Smita, preko, Rikarda, Mila, Marksa, pa do Alfreda Maršala, sistem ekonomske analize bio je preokupiran onim što jeste (*pozitivnim činjenicama* aktuelnog privrednog života) odnosima na tržištu, promenama u sistemu proizvodnje čemu su doprinosile tehnologija, društvena i međunarodna podela rada, globalna trgovina, sa jedne strane, ali i *socijalnim implikacijama*, odnosno društvenim vrednostima koje su stajale iza ekonomske aktivnosti (posebno marksizam). Tako su klasičnim smitovskim faktorima proizvodnje kao što su rad, kapital i zemlja, pojedini autori dodavali uticaj preduzetništva Kantijon, Sej, kasnije Šumpeter, ili „organizacije“ kako je skoro isti taj faktor na-

energy, space, biodiversity... With regards to the above, a special long-term significance is *given to environmental knowledge and capacity of the community and the environment* to generate sustainable development, in which a man and his community can reduce the environmental pressure and support the environmental balance of production and other processes of life, people and ecosystems. In the narrowest sense, ecology, as a science studying the relationship of the living world towards the environment, i.e. of ecosystems in the wider sense, including the society and the natural and social economy, greatly helps people to overcome the difficulties of disorders of life and nutrition chains, energy balance, water, land and habitats (Bibi & Brennan, 2008, p. 365).

## KNOWLEDGE AS A PRODUCTIVE FACTOR IN THEORETICAL ECONOMICS

From the time of Adam Smith, the founder of modern economic thought, to this day, the theory of production of economic value and the structure of production factors are in constant reconsideration. A part of the new ideas should be attributed to ideologies, but many more rapid and more significant changes in the understanding of productivity and market values occur as a result of advances in technology, market structures, development of needs and the specifics of the relationship towards nature and the environment (Drucker, 1995; Kanton, 2009).

Namely, from Smith through Ricardo Mill, Marx to Alfred Marshall, the system of economic analysis has been preoccupied by what it actually is (*positive facts* of current economic life), relationships on the market, changes in the production system, which were influenced by technology, social and international division of labour and global trade, on one hand, and *social implications*, i.e. social values that have supported economic activities (particularly Marxism). Thus, certain authors (Cantillon, Say, Schumpeter) added the impact of entrepreneurship, or “organizations” as Alfred Marshall named the same factor, to classic Smith factors of production, such as labour,

zvao Alfred Maršal (Marshall, 1987, str. 378; Drucker, 1993).

U marskističkoj interpretaciji, u skladu sa ideološkim i socio-ekonomskim razumevanjem kapitalističkog sistema proizvodnje, jedino rad (u raznim formama, kao „minuli“, „živi“, opredmećeni, odnosno onaj „apstraktni“ - u analitičkom smislu) označen je kao tvorac vrednosti, dok sve ostalo, kao što je kapital u svim formama, novac ili zemlja, odnosno priroda, postoji samo kao pretpostavka proizvodnje, ili puka sredstva za proizvodnju, sredstva rada i predmeti rada (sirovine, materijal, energija, valjda i priroda u tom smislu kao izvor i srovina) kojima opet samo ljudski rad pridaje vrednost. Na stranu logičke nedoslednosti i nekonsekventnost pri poimanju tog i takvog „apstraktnog“ ali društveno-potrebnog rada, ali je problem što relativno obilni materijali i sirovine, po sebi (voda, vazduh, geografski prostor, geografska pozicija, morska obala, jezera i planine, pa i rudna nalazišta i rezerve energenata) prema takvim „klasičnim“ teorijama nemaju vrednost kako sa marskističkog stanovišta tako i sa stanovišta teorije retkosti klasičnih ekonomista. Razume se samo dotle dok su obilna i dok ne dobiju vrednost kao oskudna i tražena dobra, čija marginalna korisnost raste sa stepenom retkosti.

Vratimo se za trenutak Smitu. On smatra da prema „prirodnom toku stvari, veći deo kapitala svakog društva koje raste upućen je na poljoprivredu, zatim na manufakturu, i najzad na spoljnu trgovinu“. Ali ovaj prirodni poredak je „morao biti preokrenut u svim modernim državama Evrope“, pošto je „spoljna trgovina nekih gradova uvele sve njihove fine manufakture ili one koje su bile prikladne za prodaju na udaljenim tržištima“ (Smith, 1970, str. 536-537). Ovi kratki citati naveni su samo radi ilustracije da se o nekoj vrsti „nove ekonomije“ koja menja prirodni poredak stvari razmišljalo još u vreme Adama Smita. To nije slučajno pošto je kraj XVII veka upravo bio period početka nove tehnološke ere u kojoj je masovna manufakturna (industrijska ) proizvodnja u sprezi sa spoljnom trgovinom

capital and the land (Marshall, 1987, p. 378; Drucker, 1993 ).

According to the Marxist interpretation, in accordance with the ideological and social-economic understanding of the capitalist production system, only work/labour (in various forms, such as “past work”, “human labour”, embodied labour, and the “abstract work” - in an analytical sense) is designated as the creator of value, while everything else, such as the capital in all the forms, money, land, or nature, exists only as a presumption of production or means of production, means of labour and objects of labour (raw materials, supplies, energy, and nature in the sense as the source of raw materials) which are valued only with the introduction of human labour. While leaving aside all the logical inconsistencies in conceiving such “abstract” but socially - necessary labour, the problem is that relatively abundant supplies and raw materials (water, air, geographical area, geographical position, seashore, lakes and mountains, mineral deposits and energy reserves) have no value by itself according to such “classic” theories either from the Marxist standpoint or from the standpoint of the rarity theory supported by classic economists. Of course, the above stands only while the supplies and materials are abundant and until they are valued as scarce and sought goods, whose marginal usefulness is increased on the basis of the rarity level.

Let us return to Smith for a moment. He believes that by “natural course of things, the greater part of the capital of every growing society is focused onto agriculture, then onto the manufacture, and finally to foreign trade.” But this natural order “had to be reversed in all the modern countries of Europe”, since Smith believes that, to some cities, foreign trade brought development of manufactures which were suitable for trade with very distant markets (Smith, 1970, p. 536-537). These short quotes were given only as an illustration that a “new economy” that changes the natural order of things was considered even in the time of Adam Smith. It is not a coincidence since the end of the seventeenth century was a period of beginning of a new technological era in which a mass (industrial) production was in conjunction with foreign trade and as such it took

preuzimala primat poljoprivredi ili, jednostavnije rečeno, korisnicima prirodnih faktora proizvodnje, odnosno primarnom sektoru proizvodnje sirovina i bazne hrane.

Kako klasična, tako i markistsička teorija proizvodnje i vrednosti, odnosno marginalne korisnosti, ne daju odgovore na mnoga savremena pitanja privrednog razvoja, ali to se, u kontekstu tadašnjih ekonomskih, tehnoloških socijalnih i demografskih pa i prirodnih činjenica, od njih nije ni moglo očekivati. Sasvim je drugačija stvar sa potonjim i današnjim ekonomskim, tehnološkim i razvojnim činjenicama. Svet proizvodnje i tehnologije se, u svakom slučaju, menjao daleko brže nego teorija o tim promenama i novim faktorima društvenog razvoja.

Tehnologija je pružala mnogo, ali je dobijala i zastrašujuće potencijale. Engleskog književika Oldusa Hakslija je veoma interesovala optimistička slika budućnosti, tako popularna početkom XX veka, pa je već 1932. godine objavio roman „Vrli novi svet“ u kome je predstavio valjda prvu antiutopiju ekonomije zasnovane na znanju. Naime, sumorna priča njegovog romna predviđa takav spoj reproduktivne tehnologije i „učenja u snu“ koji dovodi do razvoja i stvaranja „novog društva“, pred kojim je čovek ništa, a sistem sve. Radnja se odvija u Londonu, ali su ideje inspirisane američkim iskustvom snažnog organizacionog, tehnološog i industrijskog razvoja, u kome se znanje povezuje sa novim nehumanim karakterom ekonomskog i društvenog sistema.

Karakter i sadržaj ekonomske aktivnosti menjaju se relativno brzo, u skladu sa dinamičnom proizvodnjom novih potreba. Tako je nastala i jedna neobična knjiga Alvina Toflera „Šok budućnosti“ (1972), koja je poslužila kao sintagma osećaja za brzinu promena. Tofler je dokazivao da dolazeće društvo nudi neveverovatno intenzivne i brze promene, pravu revoluciju od industrijskog ka „superindustrijskom društvu“, koje će donositi „suviše brze promene u suviše kratkim intervalima“. Promene će brzinom i novinama šokirati ljude, tako da će mnogi patiti od nesnalaženja,

over the primacy from the agriculture or, to put it more simply, from the users of natural production factors, i.e. the primary sector of raw materials production and basic food production.

Both classic and Marxist theory of production and value, or of marginal utility, do not provide answers to many contemporary issues of economic development, but such action, in the context of the former economic, technological, social, demographic and even natural facts, could not have been expected. As for the latter and today's economic, technological, and developmental facts, the situation is completely different. The world of production and technology, in any case, has been changing far quicker than the theory on those changes and new factors of social development.

The technology provided many things, but it also gained frightening potential. English author Aldous Huxley became very interested in optimistic picture of the future, which was very popular in the early twentieth century. Therefore, in 1932 he published the novel "Brave New World" in which he introduced the allegedly first dystopia of knowledge-based economy. Namely, the grim story of his novel predicts a connection between reproductive technology and "dream learning" that leads to the development and creation of a "new society", in which a man is nothing, while the system is everything. The plot takes place in London, but the ideas were inspired by the American experience of a potent organisational, technological and industrial development, in which the knowledge is associated with the new inhuman character of the economic and social system.

The character and content of economic activities are changing relatively rapidly, in accordance with the dynamic production of new needs. This created an unusual book by Alvin Toffler, "Future Shock" (1972), which served as the syntagm of senses for the pace of the changes. Toffler argued that the incoming society offers incredibly intense and rapid changes, a true revolution from an industrial to a "superindustral society" that will bring "too rapid changes in too short intervals." The changes shall shock people by their pace and innovations, so that many people will suffer from disorientation, which is

što se uveliko danas i dešava kao informatičko nesnalaženje dela starije poppulacije širom sveta. To, razume se, donosi i različite troškove i uslove života, kod neprilagođenih u odnosu na prilagođene.

Faktor znanja kao pretpostravka razvoja povezuje se sve više sa dinamikom savremenog razvoja. Ekonomisti danas idu veoma daleko od klasičara pa u faktore savremenog razvoja ubrajaju ljudski kapital, prirodne resurse i „tehnološke promene i inovacije". Tako, na primer, Samjuelson i Nordhaus smatraju da je to „najvažniji točak za tehnološki napredak"a kao ključne podsticaje za ovaj razvojni stub vide „oponašanje tehnologije" i „preduzetništvo i inovacije" (Samuleson & Nordhaus 2010, str. 583). Ova poslednja sintagma predstavlja i naslov čuvene studije američkog pisca nemačkog porekla Petera Druckera, u kojoj on na obiman i sistematičan način istražuje istorijsku, globalnu, empirijsko-teorijsku težinu inovacija u kombinaciji sa preduzetničkim faktorom kao izvorom ekonomskog rasta i zapošljavanja, širom sveta (Drucker, 1993, str. 150-162).

## EKONOMIJA ZASNOVANA NA ZNANJU I ODRŽIVI RAZVOJ

Kada se (najpre u političkoj) teoriji i praksi pojavio pomalo magloviti koncept održivog razvoja, malo ko je direktno povezivao ovu sintagmu sa idejom nove ekonomije ili ekonomije zasnovane na znanju. Naime, i pored činjenice da je u jednom zvaničnom izveštaju OUN već 1987. godine (Uor Common Future) održivi razvoj definisan kao „razvoj u pravcu zadovoljavanja potreba sadašnjih generacija koji ne ugrožava mogućnost budućim generacijama da zadovolje svoje potrebe". Na konferenciji Organizacije ujedinjenih nacija o životnoj sredini i razvoju u Rio de Žaneiru 1992. godini usvojena je tzv. Rio deklaracija. Međutim, sam pojam održivog razvoja nije stavljen u originalni naslov deklaracije, koja glasi „Rio deklaracija o životnoj sre-

largely what is happening today as an IT disorientation of the older population worldwide. This, of course, entails different costs and living conditions with the unadapted population in comparison to the adapted ones.

The knowledge factor, as a presumption of development is increasingly associated with the pace of modern development. The economists today are distancing themselves from the classic experts and include human resources, natural resources and "technological change and innovation." as contemporary development factors. Samuelson and Nordhaus, for example, find that it is "the most important wheel for technological advancement" while they perceive "the emulation of technology" and "entrepreneurship and innovation" as the major incentive for such pillar of development (Samuelsson & Nordhaus 2010, p. 583). This last phrase is also the title of the famous study of an American writer of German origin - Peter Drucker, in which he, in an extensive and systematic manner, explores the historical, global, empirical and theoretical difficulty of innovation combined with entrepreneurial factor as a source of economic growth and employment around the world (Drucker , 1993, p . 150-162).

## KNOWLEDGE BASED ECONOMY AND SUSTINABLE DEVELOPMENT

When a somewhat hazy concept of sustainable development appeared in (political) theory and practice, few people directly linked this phrase with the idea of a new economy or knowledge-based economy. Namely, despite the fact that in an official report for the UN in 1987 (Our Common Future) the sustainable development was defined as "development toward meeting the needs of present generations without compromising the ability of future generations to meet their own needs." At the United Nations Convention on Environment and Development in Rio de Janeiro in 1992 a so-called Rio Declaration was adopted. However, the concept of sustainable development was not placed in the original title of the declaration, which reads "Rio Declaration on Environment and Development." The sustainable development is mentioned in a rather short text

dini i razvoju“. Održivi razvoj se provlači kroz neveliki tekst Deklaracije koja sadrži 27 načela održivog razvoja i preporučuje da svaka zemlja uradi „sopstvenu nacionalnu strategiju održivog razvoja“ kako bi se ostvarivali zajednički definisani ciljevi. Ali, ključni i najvažniji princip je princio br. 1. Deklaracije koji poručuje „da su ljudska bića u centru brige za održivi razvoj“ jer „ljudi imaju pravo na zdrav i produktivan život, u skladu sa prirodom“ (Rio Declaration UN, 1992). U ovom principu krije se specifičnost humanog pristupa koncepta kojim se pokušava izbeći apstraktni ili tzv. radikalni ekologizam (u smislu zaštite i čuvanja prirode i resursa) kao cilja po sebi, van vizure humanog razvoja i percepcije budućnosti čovečanstva.

Kasnija teorija i praksa održivog razvoja na izvestan način nametnula se gotovo svim vrstama eksperata koji su se bavili globalnim ekonomskim, socijalnim, ekološkim, zdravstrvenim, tehnološkim i drugim aspektima razvoja, tako da je lista različitih definicija principa „održivosti“ prilično duga, ali se uglavnom konkretno mnogo više govori o „neodrživosti“. Konačno, sledeće dve konferencije OUN (Rio +10 u Johanezburgu i Rio + 20 u Rio de Žaneiru) obe su nominovane kao konferencije OUN posvećene održivom razvoju.

Negde početkom III milenijuma, a nakon konferencije u Johanezburgu, počinje težnja ka primeni „integralnog konceprata održivog razvoja“ zasnivanog na modelu tri stuba održivosti: ekonomskom, socijalnom i ekološkom. Razume se da je u okviru ovih stubova bitno naći mesto za institucionalnu i tehnološku održivost, kao i za specifične sadržaje održivog gospodarenja prirodnim resursima. Pri tome se u prepoznavanju održivosti sve više koristi test preklapanja tri sfere održivosti: ekonomske socijalne i ekološke, a koristi i čitav niz indikatora (starih i inoviranih) održivog razvoja, počev od stanja životne sredine, dostupnosti i kvaliteta vode za piće, do pristupu obrazovanju, zaštite ma-

of the Declaration, which contained 27 principles of sustainable development and recommended that each country should prepare its own “National Strategy for Sustainable Development” in order to accomplish jointly defined objectives. However, the key and most important principle is principle no.1 of the Declaration, which says that “human beings are at the centre of concerns for sustainable development” because “people have a right to a healthy and productive life in harmony with nature “ (Rio Declaration of the UN, 1992). This principle contains the specificity of the human approach to the concept that tries to avoid the abstract or so called radical environmentalism (in terms of the protection and preservation of nature and resources) as a goal in itself, beyond the point of view of human development and perception of the future of humanity.

Subsequent theory and practice of sustainable development was in a way asserted to all the types of experts dealing with global economic, social, environmental, health, technological and other aspects of development, so that the list of different definitions of the “sustainability” principle is rather long, but the discussion mainly deals much more with the “unsustainability”. Finally, the following two UN Conferences (Rio +10 in Johannesburg and Rio+ 20 in Rio de Janeiro) were both nominated as UN conferences dedicated to sustainable development.

Somewhere at the beginning of III millennium, after the conference in Johannesburg, began the pursuit of the implementation of “integrated sustainable development concept” based on the model of three pillars of sustainability: economic, social and environmental. Of course, within these pillars it is essential to find a place for institutional and technological sustainability, as well as for the specific features of sustainable management of natural resources. In the process of the recognition of sustainability, there is an increased use of the test of three overlapping spheres of sustainability: economic, social and environmental, with the use of a range of indicators (both already existing and innovated ones) of sustainable development, ranging from the environment condition, availability and quality of drinking water, access to ed-

njinskih prava, zdravstvene i socijalne zaštite. Možda najvažniji faktor uspostavljanja modela održivog razvoja na duge staze predstavljaju obrazovanje i izgrađenost instritucija (Đukić, 2011, str. 312).

Najveća vrednost druge konferencije o održivom razvoju (Johanezburg 2002) je činjenica da su za istim konferencijskim stolom i sa istim mogućnostima sedeli predstavnici političkog, poslovnog i eksprtskog života, odnosno vladinog i nevladinog sektora. Princip participativnosti u koncipiranju održivog razvoja isto je toliko bitan kao i princip međugeneracijske pravde ili princip „zagađivač-korisnik plaća". Naime, održivi razvoj se može trasirati u naučnim timovima, prihavatati i promovisati među političarima, normativizovati i ozakoniti pravnim institucijama, ali se definitivno mora sprovoditi u život zahvaljujući učešću poslovnog sektora, velikih i malih kompanija širom sveta, kao i ponašanjem građana (Đukić, 2011, str. 317).

Već na trećoj po redu svetskoj konferenciji UN RIO + 20 osećao se krizni „zamor materijala" pa je i rasprava o održivom razvoju tekla više manje u znaku „zelene ekonomije" i pokušaja sveta da izađe na kraj sa prvom velikom globalnom krizom koja se dešava u XXI veku. To je orijentisalo i održivi razvoj ka ekonomskim sadržajima i mogućnostima da se kreiraju „zelena radna mesta" „zelene investicije" i druge antikrizne mere. Međutim, dobra stvar je što se na tom skupu svet zapitao, možda i silom prilika, šta i kako dalje sa strukturnim merama nakon izlaska iz krize.

Naime, postojeće model rasta, trgovine, tehnološkog tazvoja današnjice nije dovoljno održiv, niti u društveno-ekonomskom, niti u ekološkom smislu. Učesnici samita u Riju 2012. godine bar su se zamislili kuda takav način vodi dalje i da li će opet doći do strukturne krize, izazvane neusaglašenim merama i podsticajima rasta radi samog rasta, što je „ideologija ćelije raka" (Lester Braun).

Međutim, rast je bio i ostao pretpostavka svakog, a, naročito, održivog razvoja.

ucation, protection of minority rights, health and social care. Perhaps the most important factor in establishing the model of sustainable development in the long run are the education and the completeness of the institutions (Đukić, 2011, p. 312).

The greatest value of the second Conference on Sustainable Development (Johannesburg 2002) is the fact that the representatives of political, business and expert segment, i.e. both governmental and non-governmental sectors sat at the same conference table with the same capabilities. The principle of participation in the creation of sustainable development is just as important as the principle of intergenerational justice or the "Polluter Pays Principle". In other words, sustainable development can be traced in the scientific teams, accepted and promoted among the politicians, standardised and validated by legal institutions, but it definitely has to be implemented in the life process through the participation of the business sector, large and small companies around the world, as well as through the behaviour of citizens (Đukić, 2011 p. 317)

By the third consecutive World Conference of the UN RIO +20 "a fatigue of material" was evident, therefore directing the sustainable development discussion more or less towards the "green economy" and the attempts of the world to deal with the first major global crisis arising in 21st century. It oriented the sustainable development towards economic content and opportunities to create "green jobs", "green investments" and other anti-crisis measures. However, the good thing is that, at this meeting, the world wondered, perhaps forced by the circumstances, what and how to proceed with structural measures after the crisis.

Namely, the current model of growth, trade, technological development of today is not sustainable enough, nor in the social-economic or in environmental sense. The participants of the summit in Rio 2012 have at least thought about where such method was leading and whether there will again be a structural crisis caused by conflicting measures and incentives of growth for the purpose of growth in itself , which is "the ideology of the cancer cell" (Lester Brown).

However, the growth has been and still is the assumption of every development, particularly

Evolucija znanja kao određujućeg faktora produktivnosti odigrala se veoma brzo. Nobelovac Džejms Tobin skrenuo je najpre pažnju da je u naprednijim ekonomijama već sedamdesetih godina XX veka doprinos radne snage i kapitala ekonomskom rastu bio svega 12%, a znanje je produktivnosti doprinosilo preko 80%. Ta tendencija bila je najprisutnija u Japanu gde je preko 95% rasta dolazilo od znanja, a samo 5% od ostalih faktora. Onda su se javili već pomenuti socijalni teoretičari kao što je bio Danijel Bel, Alvin Tofler, Drucker koji su oblikovali koncept privrede zasnovane na znanju.

Evo podataka koji bi donekle govorili o velikim promenama nastalim u strukturi korišćenja i doprinosu pojedinih proizvodnih faktora produktivnosti rada i drugih faktora. Godine 1950. je u proizvodnji (industrija, poljoprivreda itd.) najrazvijenijih industrijskih zemalja bilo zaposleno: u Francuskoj 61,6%, u Nemačkoj 66,3%, u Japanu 68,9%, Velikoj Britaniji 50,9%, a u SAD svega 43,7% radnika. Već 1970. godine taj procenat se smanjuje i kreće se od 32% za SAD do 53% za Japan. Kraj XX veka ubrzava taj proces restrukturiranja zaposlenosti tako da usled rasta produktivnosti u proizvodnji, ali i sve veće uloge obrazovanja, naučnoistraživačkog rada u tome, zaposlenost u proizvodnji se kreće od 21,8% (SAD) do 41% (Japan). Tokom ovog perioda izuzetno je rastao procenat zaposlenih u tržišnim i ne-tržišnim uslugama. Udeo radne snage u uslužnom sektoru 1950. godine kretao se od 31% (Japan) do 56% (SAD). Ali je 1995. godine taj procenat narastao od 59% (Japan) do čak 78% (SAD) (Crafts, 2000). Istraživanja ključnih faktora rasta najrazvijenijih zemalja još tokom druge polovine XX veka ubedljivo su pokazala da je u njihovoj strukturi došlo do bitne promene, tako da su klasični materijalni faktori kao što su rad i kapital smanjili učešće u vrednosti angažovanih faktora, ali ne zbog oskudice, već zbog činjenice da su nematerijalni faktori kao što su znanje,

of sustainable development. The evolution of knowledge as a determinative factor of productivity occurred very quickly. Nobel laureate James Tobin first drew attention to the fact that in more advanced economies of the 1970s the contribution of labour and capital to the economic growth was only 12%, while knowledge contributed over 80% to the productivity. This tendency was most prevalent in Japan, where over 95% of the growth originated from knowledge, while only 5% was from the other factors. Later, the already mentioned social theorists such as Daniel Bell, Alvin Toffler and Drucker appeared and shaped the concept of knowledge-based economy.

Here is the data that is somewhat providing evidence on great changes occurring in the structure of use and contribution of individual production factors to the labour productivity and to other factors. In 1950 the production (industry, agriculture, etc.). of the most developed industrial countries involved 61.6% of the population in France, 66.3% in Germany, 68.9% in Japan, 50.9% in UK, while the U.S. employed only 43.7% of workers. In 1970 that percentage was decreased ranging from 32% for the United States to 53% in Japan. The end of the twentieth century accelerated the process of restructuring of employment due to productivity growth in manufacturing, and increased role of education and scientific research, the employment in manufacturing ranges from 21.8% (USA) to 41% (Japan). During this period the percentage of employees in the market and non-market services was significantly increases. The share of labour in the service sector in 1950 ranged from 31% (Japan) to 56% (USA), but in 1995 that percentage increased from 59% (Japan) up to 78 % (U.S.) (Crafts, 2000). Research the key factors of growth of the most developed countries in the second half of the twentieth century have shown convincingly that in their structure there has been a fundamental change, so that the participation of classic physical factors such as labour and capital in the value of the factors involved was reduced, but not because of their scarcity, but due to the fact that the intangible factors such

naučna istraživanja, informacije itd. davali daleko veći doprinos ekonomskom rastu i razvoju (Dragutinović, Filipović & Cvetanović, 2005, str. 44).

Sigurno je da sve ima svoju cenu koja se ogleda u problemima prilagođavanja novoj strukturi i potrebama industrije, usluga itd, pri čemu veliki broj radnika, posebno onih koji su zaposleni u klasičnim industrijama, dolazi u problem česte promene radnih mesta, dodatne obuke ili manje ili više trajne nezaposlenosti. To je uslovljeno, pre svega, uticajem tehnologije i društva znanja na ekonomski sistem i strukturu.

## EKSPANZIJA HUMANOG KAPITALA - OBRAZOVANJE, TEHNOLOGIJA I ODRŽIVOST

Sistematsko sticanja znanja, školovanje, širenje radne kulture i poštovanja institucija gotovo uvek su značili napredak koji se ticao onoga što je obuhvaćeno pojmom humanog ili ljudskog kapitala. U ovdašnjoj ekonomsko-teorijskoj literaturi više pažnje privukla je analiza inače nešto šire kategorije „društveni kapital“. Analiza uloge društvenog kapitala dosta uspešno objašnjava razlike u dostignutom nivou razvoja zajednica sa sličnim ostalim materijalnim i drugim pretpostavkama (Golubović, 2007). Međutim, ako je akumulirani humani kapital pretpostavka stabilnog i dugoročnog ekonomsko-tehnološkog razvoja, a ljudski kapital se upravo izgrađuje na temelju mirnog i dugoročnog ekonomskog i tehnološkog napretka, onda ispada da društva koja su ga stekla u većoj meri, imaju mnogo više šansi za stabilan i uravnotežen društveni sistem, pa i za dugoročno održiv ekonomski rast i razvoj, dakle značajnu refentnu prednost. Kako onda objasniti promenu uloge koju donose novi vetrovi humanog kapitala, koji nisu čisto ekonomska već i socijalna i kulturološka kategorija?

as knowledge, scientific research, information, etc. provided a far greater contribution to economic growth and development (Dragutinović, Filipović & Cvetanović, 2005, p. 44)

It is certain that everything has its price, which is reflected in the problems of adapting to the new structure and the needs of industry, services, etc., where large numbers of workers, especially those employed in traditional industries, faces the problem of frequent changes in employment, additional training or more or less permanent unemployment. It has been conditioned, primarily by the impact of technology and knowledge society onto the economic system and structure.

## EXPANSION OF HUMAN CAPITAL - EDUCATION, TECHNOLOGY AND SUSTAINABILITY

The systematic acquisition of knowledge, education, expansion of work culture and respect for institutions have almost always meant progress that was related to what is included in the concept of human capital. In the local economic-theoretical literature, more attention was drawn by the analysis of a somewhat broader category of “social capital”. The analysis of the role of social capital is quite successful in explaining the differences in the achieved level of development of communities with similar material and other assumptions (Golubović, 2007). However, if the accumulated human capital is the assumption of a stable and long-term economic and technological development, and the human capital is built exactly on the basis of a peaceful and long-term economic and technological progress, it turns out that the societies that have acquired the above in a greater extent, have a much better chance for a stable and balanced social system, as well as for long-term sustainable economic growth and development, therefore meaning a significant reference advantage. How to explain the change in the role brought by the new currents of human capital, which are not a purely economic category, but also belong to social and cultural categories?

Reč je upravo o ekonomskom doprinosu novih znanja i sistema njihove disperzije, prethodnog obrazovanja, kao i opšteprihvaćenih društvenih vrednosti, kulture, navika, svesti i običaja ljudi koji se bave određenom privrednom aktivnošću kao radnici, preduzetnici, državni funkcioneri, menadžeri, administracija… Taj doprinos često se ostvaruje indirektno, preko javnih ili neformalnih institucija dobrih poslovnih običaja, društvene kohezije, tolerancije i uslova za poslovanje, investicije i razvoj.

U okviru prve generacije tzv. endogenih modela rasta akumulacija humanog kapitala obuhvaćena je kao ključni pokretač rasta. To je tzv. Bekerijanski model humanog kapitala, koji podrazumeva komparativne prednosti koje homogenizuju agense sadašnje proizvodnje, tzv. perfektnog konkurentskog tržišta, omogućavajući ljudima veću dokolicu i tekući dohodak, kao i njihova nastojanja da podignu nivo znanja i omoguće veći dohodak u budućnosti. Ovo gledišta vidi ulogu humanog kapitala, pre svega, kroz individualno ponašanje ljudi u društvu i direktnu transmisiju znanja kao pretpostavke statusnog rangiranja, osvajanja pojedinih zanimanja ili umreženih relacija, kao i direktnog socijalnog transfera znanja (Carillo, 2005). Lukasova teza da humani kapital obezbeđuje ogroman ekonomski doprinos na bazi učinka pozitivnih eksternalija je veoma bitan doprinos prenosa razmatranja na jedan uhodani analitički teren. Nobelovac Lukas je 1988. godine pokazao da humani kapital produkuje obilne iznose pozitivnih eksternalija. Ideja se tiče direktne socijalne veze između agenasa koji kreiraju znanje kao što su obrazovanje, sistem porodičnog učenja, kulturne interakcije. Novi tipovi modela endogenog rasta bave se analizom procesa kojima se znanje prenosi preko individua, ali ipak može da omogući značajan porast učinka eksternalija.

Znanje je po definiciji namenjeno unapređenju ljudskog faktora proizvodnje, a ulaganje u ljudske resurse ima presudni uticaj

This is about the economic contribution of new knowledge and systems of their dispersion, prior education, as well as generally accepted social values, culture, habits, awareness and customs of people who are dealing with a particular economic activity as workers, entrepreneurs, government officials, managers, administration... Such contribution is often exercised indirectly, through public or informal institutions of good business practices, social cohesion, tolerance and conditions for business, investment and development.

In the first generation of so-called endogenous growth model the accumulation of human capital is included as a key driver of growth. It is a so called Beckerian Model of human capital, which includes comparative advantages which homogenise the agents of the current production, the so-called perfect competitive market, allowing people more leisure and income, as well as their efforts to educate and gain a higher income in the future. This view sees the role of human capital, primarily through individual behaviour of people in society and the direct knowledge transmission as a presumption of "status ranking" of occupations, or networked relations, as well as direct social knowledge transfer (Carillo, 2005). Lucas thesis that human capital provides a huge economic contribution based on the performance of positive externalities is a very important contribution to the transfer of analysis onto a well-established analytical field. Nobel Laureate Lucas in 1988 demonstrated that human capital produces copious amounts of positive externalities. The idea refers to the direct social relationship between agents that create knowledge, such as education, family learning system, cultural interaction. New types of endogenous growth models deal with the analysis of the processes by which knowledge is transmitted over the individual , but it can still provide a significant increase in the impact of externalities.

Knowledge by definition is intended to promote the human factors of production, and investment in human resources has a crucial impact on the

na održivost. Politika obrazovanja samo je deo strategije ulaganja u ljudske resurse. Prethodna analiza održivog razvoja u sektorskoj primeni pokazala je da njegova suština nema mnogo smisla ukoliko nije prevashodno okrenuta potrebama čovečanstva. Pa čak iako se ponekad suočavamo sa činjenicom da je čovekova ideja da sebi podredi prirodu i Planetu neodrživa i kontraproduktivna, mora se priznati da ne bi bilo ni održivog razvoja niti ekološke i druge politike održivosti, da nije ljudi i njihovih akcija, usmerenih ka sopstvenim interesima, ali u skladu sa prirodnim zakonima, jer je to jedini mogući pravac izgradnje održivosti.

Sva ulaganja su dobrodošla ali su ona koja su okrenuta podizanju kvaliteta ljudskih resursa najvažnija. Samo obrazovani, socijalno i ekološki svesni i odgovorni ljudi mogu graditi bolju budućnost zajednice, u interesu sopstvene i budućih generacija. Međutim, za široko društveno prihvatanje tih ideja presudne su društvene institucije, kao i znanje, obrazovanje i kultura ljudi.

## Ljudski kapital i ekonomija znanja

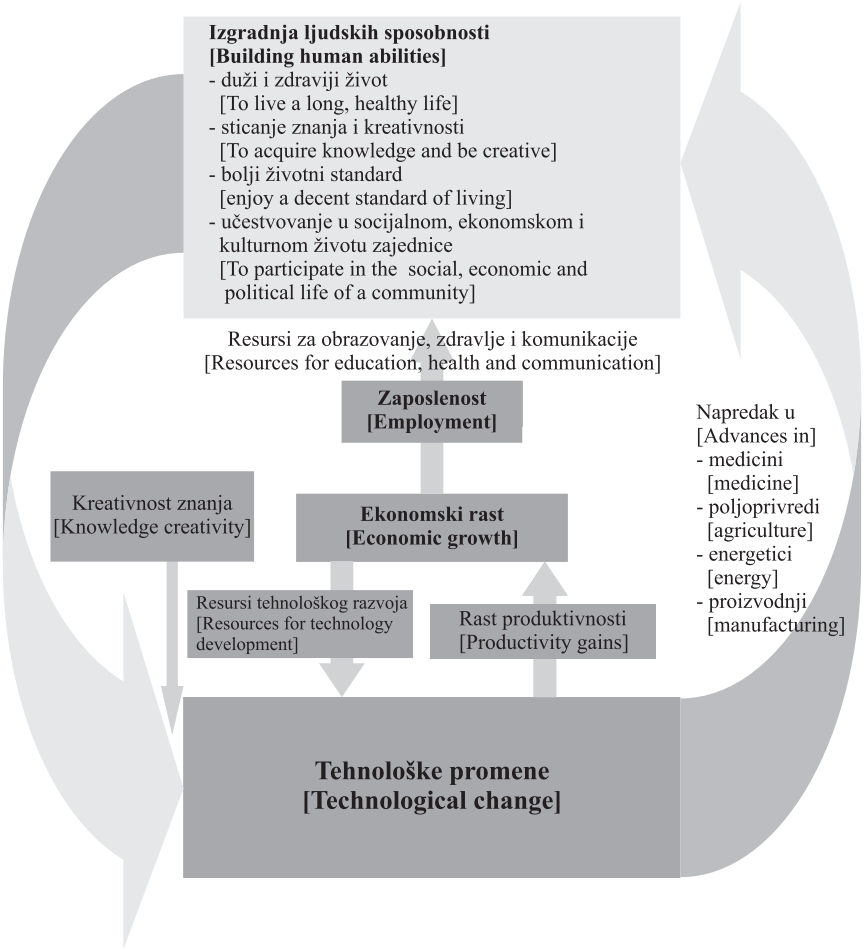
Pojedinci stiču znanja prvenstveno radi sebe, ali se pri tome izgrađuju ljudske sposobnosti uopšte, tako što ljudi žive duže i zdravije, stiču znanja i kreativnost, imaju bolji standard, učestvuju u socijalnim, političkim i kulturnim dešavanjima. Kakop je to lepo skicirao UNDP u Izveštaju o humanom razvoju 2001. (shema 1) i pokazao da ljudska kreativna znanja doprinose tehnološkom progresu koji podstiče produktivnost a time i ekonomski rast. Ekonomski rast omogućava višu zaposlenost, čime se obezbeđuju resursi za obrazovanje, zaštitu zdravlja i komunikacije. Međutim, tehnološke promene po sebi znače i napredak medicinske zaštite, poljoprivrede, energetike i proizvodnje uopšte, što snažno podržava proces izgradnje ljudskih sposobnosti, odnosno humanog kapitala

sustainability. Education policy is only a part of the strategy of investing in human resources. The previous analysis of sustainable development in the sector application demonstrated that its essence does not make much sense unless it is primarily focused on the needs of humanity. Even though we are sometimes faced with the fact that a man's idea to subdue the nature and the planet is unsustainable and counterproductive, it must be recognized that there would be no sustainable development nor environmental or other sustainability policies, if there were no people and their actions, directed towards their own interests but in accordance with the laws of nature, because it is the only possible course of building sustainability.

All the investments are welcome, but the ones that are facing towards the increase of the quality of human resources are the most important. Only educated, socially and environmentally aware and responsible people can build a better future for the community, in the interest of their own and future generations. However, for the purpose of broad social acceptance of these ideas a crucial role is played by the social institutions, as well as by knowledge, education and culture of the people.

## Human capital and knowledge economy

Individuals acquire knowledge primarily for themselves, but at the same time they form human abilities in general by enabling people to live longer and healthier, to gain knowledge and creativity, to have better living standards, to participate in social, political and cultural events. As it was nicely outlined by the UNDP Human Development Report in 2001 (scheme 1) showing that human creative skills contribute to technological progress which encourages productivity and thus encouraging economic growth. Economic growth enables higher employment, which provide resources for education, health care and communication. However, technological changes by itself imply the progress of medical care, agriculture, energy and manufacturing in general, which strongly supports the process of building human capabilities and human capital.




*Shema 1.* Veza između tehnološkog progresa i humanog razvoja (UNDP, 2001)

Ključna poruka koja proističe iz savremene teorije društvenog razvoja glasi da postoje bitne direktne i indirektne veze između izgradnje ljudskih kapaciteta, odnosno humanog kapitala i dinamike tehnoloških promena, zasnovanih na ekonomskom rastu, zaposlenosti i povećanju dohotka, i standrada života ljudi, sa druge strane.

## Održivost - rast i/ili razvoj

Rast podrazumeva više nečega nego prethodno, a razvoj poboljšanje kvaliteta nečega. Na primer, više škola, knjiga i računara mogu da znače bolje obrazovanje, ali jednostavni rast kao povećanje broja materijalnih i drugih pretpostavki mogu da prouzrokuju i nastavak lošeg sistema

*Scheme 1.* Links between technology and human development (UNDP, 2001)

The key message emerging from contemporary theory of human development is that there are significant direct and indirect links between building human capacity, i.e. human capital and the pace of technological change, based on economic growth, employment and income growth, and the people's standard of living.

## Sustainability - growth and/or development

The growth implies more of something than before, and the development implies the improvement of quality of something. For example, more schools, books, and computers may imply better education, but a simple growth, such as an increase in the number of financial and other presumptions can cause the contin-

prethodnog obrazovanja. Ili, sa druge strane posmatrano, više fabrika i radnih mesta ne moraju da znače i kvalitetniji život. Razvoj podrazumeva unapređenje sistema proizvodnje i načina života.

Mada postoje izvesni nesporazumi o tome da li svaki rast (ukoliko je održiv) podrazumeva i razvoj, u udžbeničkoj i drugoj literaturi koja se ovde navodi jasno je napravljena predmetna distinkcija (Dragutinović, Filipović & Cvetanović, 2005). Takođe je demonstrirana bitna empirijska veza između obima kreiranog i primenjenog znanja sa jedne strane i privrednog i tehnološkog razvoja sa druge.

Uloga zemlje, rada i kapitala, kao teorijski tradicionalnih faktora proizvodnje nije nestala, ali kao da postaje sekundarna. Ovi faktori se mogu obezbediti relativno lako ukoliko za to postoje preduzetnička volja ideja i specijalizovano znanje. Jedan od ključnih razvojnih aduta manje razvijenih zemalja (faktički čitav takozvani treći svet) je međusobno takmičenje da privuku strane investicije na njihovu teritoriju i da budu što privlačnije za poslovanje u svakom smislu. To se pokušava na osnovu obezbeđivanja mnoštva inicijativa (poreski rajevi, slobodna trgovina, besplatno zemljište, niske cene električne energije, zone slobodnog izvoza, privlačenje multinacionalnih kompanija, desindikalizacija i obezbeđivanje jeftinog rada i lakši pristup ostalim regionalnim i svetskom svetskim tržištu) (Hanson, 2008).

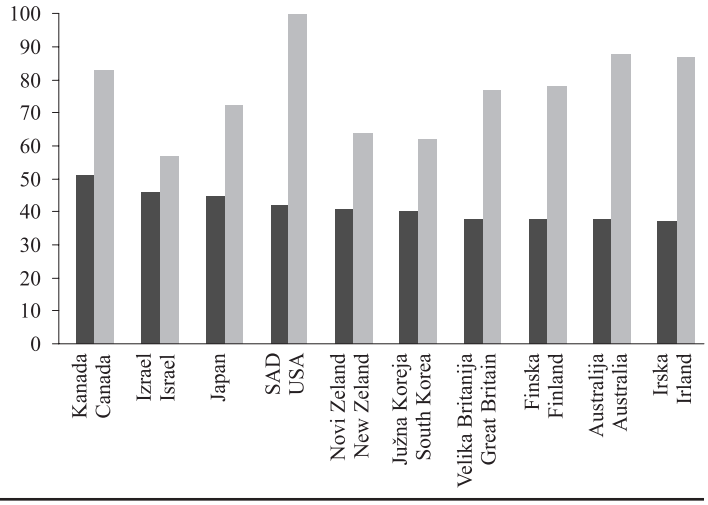
Međutim, na duže staze gledano, pokazuje se da je obrazovanje direktno povezano sa ekonomskim razvojem. Naime, podaci govore da je u prvoj deceniji XXI veka svih deset zemalja sa najvišim procentom visoko - obrazovanog stanovništva spadalo u red nacija sa veoma visokim dohotkom per capita (od 26 do 45 hiljada dolara, a u proseku 35000 USA dolara, grafikon 2).

uation of poor system of prior education. Or , on the other hand, more factories and jobs do not necessarily mean a better quality of life. Development presumes the improvement of the production system and the way of life.

Although there are some disagreements as to whether any increase (if sustainable) includes the development, the textbook and other literature referred to herein is clearly separated based on the subject (Dragutinović, Filipović & Cvetanović 2005). Likewise, a significant empirical relationship was demonstrated between the scope of the created and applied knowledge on one hand and economic and technological development on the other.

The role of land, labour and capital, as theoretical traditional factors of production has not disappeared, but it seems that it is becoming secondary. These factors can be provided relatively easily if there are entrepreneurial willingness, ideas and specialized knowledge. One of the key advantages of development of less developed countries (in fact the entire so-called “third world”) is a mutual competition to attract foreign investment onto their territory and to be more attractive for business in every sense. Such efforts are made on the basis of providing a number of initiatives (tax havens, free trade, free land, low electricity prices, free zone exports, attracting multinational companies, abolition of trade unions and providing cheap labour and easy access to other regional markets as well as the global world market) (Hanson, 2008)

However, in the longer term perspective, it has been shown that the education is directly linked to economic development The data show that in the first decade of the 21st century, all of the ten countries with the highest percentage of highly - educated population fell within the nations with very high income per capita (from 26 to 45 thousand dollars, and on average $35000, graph 2).




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| % populacije sa tercijalnim obrazovanjem<br>% of population with tertiary education | 51 | 46 | 45 | 42 | 41 | 40 | 38 | 38 | 38 | 37 |
| BDP per capita (Index(SAD=100))<br>BDP per capita (Index(USA=100)) | 83 | 56.9 | 72.6 | 100 | 63.8 | 61.9 | 76.8 | 78 | 87.6 | 86.9 |

*Grafikon 1.* Procenat visokoobrazovanih u korelaciji sa ostvarenim BDP per capita za deset najobrazovanijih nacija sveta (USA=100) (Sauter & Hess, 2012)

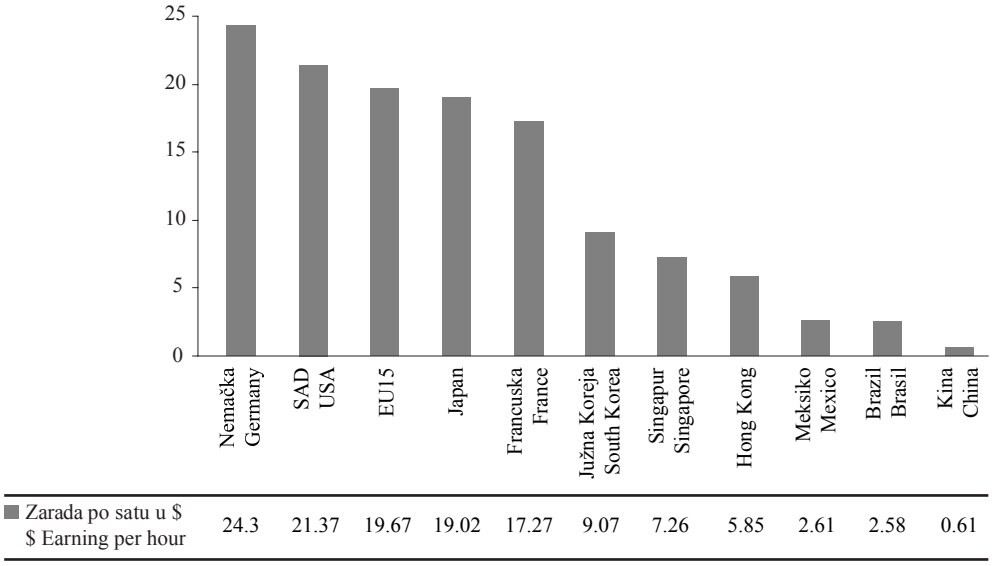
*Graph 1.* Percentage of highly educated in the correlation with the achieved GDP per capita of the tem most educated nations of the world (USA=100) (Sauter & Hess, 2012)

Istraživači razlika u sticanju i distribuciji znanja na globalnom nivou jasno su ukazali na činjenicu da sistematsko obrazovanje i širenje znanja uzrokuje bitne razlike u nivou produktivnosti rada između zemalja sličnih prethodnih razvojnih pretpostavki. Te razlike se postižu zahvaljujući ekonomiji znanja, čak i u uslovima oskudice prirodnih resursa. Ilustracija sa slike 4. pokazuje ogromne razlike u dohotku po času rada koje su bile zabeležene u svetu početkom XXI veka. Tako je za čas rada u to vreme bilo moguće zaraditi oko 2,5 USA dolara, u Južnoj Koreji nešto više od 9 dolara, u Nemačkoj čak preko 24 dolara, ali u Kini svega 0,6 dolara.

I pored razlika u kupovnoj moći zbog različitog nivoa ekonomske snage i strukture cena, razlike su bile i ostale ogromne. U studiji koja prati i analizira ove razlike u višedecenijskom intervalu pominje se da su tokom šezdesetih i sedamdesetih godina XX veka razlike u zaradama između Meksika i Brazila, sa jedne strane, i Južne Koreje, sa druge bile gotovo zanemarljive.

Researchers of the differences in the acquisition and distribution of knowledge on a global scale clearly pointed to the fact that the systematic education and distribution of knowledge causes significant differences in the level of labour productivity among the countries of similar previous development assumptions. These differences are obtained thanks to the knowledge economy, even in the conditions of scarcity of natural resources. The illustration in Figure 4 shows the enormous differences in income per working hour, which were recorded in the world at the beginning of XXI century. For an hour of work at that time it was possible to earn about $2.5 in the USA, over $9 in South Korea, over $24 in Germany, but only $0.6 in China.

Despite the differences in purchasing power due to the different levels of economic strength and price structure, the differences were and are still enormous. In a study that tracks and analyzes the differences in the decades-long interval it is mentioned that during the sixties and seventies of the twentieth century, the differences in earnings between Mexico and Brazil on one hand, and South Korea on the other, were almost negligible.




| | Nemačka Germany | SAD USA | EU15 | Japan | Francuska France | Južna Koreja South Korea | Singapur Singapore | Hong Kong | Meksiko Mexico | Brazil Brasil | Kina China |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Zarada po satu u $ / $ Earning per hour | 24.3 | 21.37 | 19.67 | 19.02 | 17.27 | 9.07 | 7.26 | 5.85 | 2.61 | 2.58 | 0.61 |

*Grafikon 2.* Razlike u zaradama kao produkt transfera i ekspanzije znanja: Zarade po času rada (Hanson, 2008)

*Graph 2*. Differences in earnings as the product of transfer and distribution of knowledge: Earnings per hour of work (Hanson, 2008)

## Nova ekonomija i faktor znanja kao uslov priključivanja EU

Širenje znanja i informacija, ulaganja u istraživanja i nauku osnovne su pretpostavke za brz razvoj zasnovan na novim tehnološkim rešenjima. Uprkos povremenim oštrim padovima tehnoloških potencijala, osnova ekonomije zasnovane na znanju još uvek su informacije i informaciono-komunikacione tehnologije. Iz toga nipošto ne treba zaključiti da se čitav tehnološki napredak i koncept ekonomije zasnovane na znanju bazira na kreiranju i širenju informaciono-komunikacionih tehnologija. Nove tehnologije obuhvataju mnoge tehnološke novine tzv. treće naučno-tehnološke revolucije: elektroniku, informatiku, automatizaciju, robotiku itd. Međutim, tehnički progres današnjeg sveta dovodi do promena na koje se do samo pre nekoliko decenija nije moglo računati: od gotovo trenutnog globalnog prenosa i obrade informacija, do novih materijala koji su zasnovani na neuro-nano-bio tehnologijama ili genomici, kao specifični hibridi koji doprinose energetskoj efikasnosti, ljudskom zdravlju, kvalitetnijem i dužem životu ljudi. Tako se dolazi do onih dinamičkih posledica

## The new economy and the knowledge factor as a condition of joining the EU

Distribution of knowledge and information, investment in research and science are the basic prerequisites for the rapid development based on new technology solutions. Despite the occasional sharp drops of technological potential, the basis of the knowledge based economy still lies in the information and information and communication technologies (ICT). From this it certainly should not be inferred that the whole concept of technological progress and knowledge-based economy is based on the creation and distribution of ICT. New technologies include many technological innovations of the so called third scientific-technological revolution: electronics, IT, automation, robotics and so on. However, the technological progress of today's world leads to changes that only a few decades ago were inconceivable: from almost immediate global transmission and processing of information, to new materials based on neuro-nano-bio technologies and genomics, as well as specific hybrids that contribute to energy efficiency, human health, better quality and longer life of the people, which eventually leads us to those dynamic consequences of

tehnoloških promena i inovacija na kojima je insistirao čuveni austrijsko-američki ekonomista Šumpeter, kao na „kreativnoj destrukciji“ a kasnije i Draker (uticaj inovacija) kao na najvažnijim faktorima oslobađanja preduzetničke energije i rasta produktivnosti rada, odnosno podizanja ekonomske efikasnosti i povećanja nacionalnog bogatstva.

Sa političke tačke gledišta, sve te promene uz karakteristike znanja kao „javnog dobra“ podižu izazove socijalne i ekonomske politike, posebno radi odgovarajuće razvojne strategije i politike zemalja u tranziciji i njihovog pristupanja Evropskoj uniji (Piech, 2008, str. 1). Već je rečeno da se sama EU, Lisabonskim samitom, opredelila za izgradnju ekonomije zasnovane na znanju koja donosi nova i kvalitetna radna mesta, kao i ekonomsku efikasnost. Ujedinjena Evropa želi više da ulaže u znanje, informacije i tehnološki razvoj, kao i takvo obrazovanje novih generacija u kome će rad i kapital postati produktivniji zahvaljujući disperziji znanja i novih tehnologija. Upravljanje razvojem kako za Evropsku uniju tako i za svet postalo je imperativ trasiranja prihvatljive budućnosti za nove generacije ne samo u smislu održivosti ekonomskog sistema, rasta i razvoja već, pre svega, kvaliteta života, odnosno sociokulturnog i ekološkog stanja i načina života. Kako nacionalne tako i regionalne strategije održivog razvoja postale su deo novog planskog pristupa budućnosti, naročito nakon Konferencije u Johanezburgu 2002.

Sve zemlje jugoistočne Evrope pristupile su izradi sopstvenih nacionalnih strategija održivog razvoja. Međutim, njihov budući razvojni put skopčan je sa mnoštvom sektorskih problema, naročito onih koje je potencirala ekonomska kriza: od smanjenja siromaštva, zapošljavanja, efikasnosti javne uprave, do stanja životne sredine, korupcije, neodržive energetike, vodosnabdevanja... Pred zemljama kao što su Srbija, Crna Gora, BiH, Makedonija, Albanija, stoje i posebni izazovi u kandidaturi

technological change and innovation which the famous Austrian- American economist Schumpeter insisted on, as the “creative destruction”, later followed by Drucker (impact of innovation) as the most important factor of releasing entrepreneurial energy and labour productivity growth, i.e. raising economic efficiency and increase of national wealth.

From a political point of view, all of these changes to the characteristics of knowledge as a “public good” raise the challenges of social and economic policies, particularly for the appropriate development strategies and policies of the countries in transition and their accession to the European Union (Piech, 2008, p. 1). It has been said that, by the Lisbon Summit, the EU itself decided to build a knowledge-based economy that brings new and high-quality jobs as well as the economic efficiency. The European Union wants to invest more in knowledge, information and technological developments, as well as in educating new generations with whom labour and capital shall become more productive due to the dispersion of knowledge and new technologies. Managing the development both for the European Union and for the world has become an imperative of tracing acceptable future for the new generation, not only in terms of the sustainability of the economic system, growth and development, but, above all, the quality of life and socio-cultural and environmental conditions and lifestyle. Both national and regional sustainable development strategies have become part of the new planned approach to the future, especially after the Conference in Johannesburg in 2002.

All the countries of South-East Europe (SEE) have started developing their own national strategies for sustainable development. However, their future development path is linked with numerous sector issues, particularly those emphasized by the economic crisis: from the reduction of poverty, employment, efficiency of public administration, to the condition of the environment, corruption, unsustainable energy, water supply... The countries such as Serbia, Montenegro, Bosnia, Macedonia, Albania, face specific challenges with regards to the candidacy and fulfilling the formal and actual

i ispunajvanju formalnih i stvarnih uslova za članstvo u EU. Ogroman deo tih pretpostavki tiče se zaštite životne sredine i funkcionisanja institucija – suštinski usaglašenog i održivog razvoja društva.

Međutim, prethodno su nagomilani brojni problemi i neodrživi tokovi kako u oblasti makroekonomije (budžetski i spoljnotrgovinski deficit, inflacija, javni dug, finansijska nedisciplina…) tako i u sferi mikroekonomije i socijalnog sistema i životne sredine... Naime, nabujali su korupcija, poreska evazija, siromaštvo, a sve uz porast nezaposlenosti i siromaštva. Biće potrebno mnogo napora da se uz pomoć ekonomije zasnovane na znanju dostignu potrebni standardi.

## DA LI ĆE U SVETU PREVLADATI PAMETNA EKONOMIJA?

### Primer akcije za klimu

Jedan test potencijalno pozitivnog spoja ekonomije zasnovane na znanju i održivog razvoja na delu je gotovo dve decenije. „Akcija za klimu“ na globalnom nivou otpočela je u drugoj polvini 1997. godine donošenjem Kjoto protokola. Ključna intencija ovog globalnnog sporazuma bila je smanjivanje nivoa emisije gasova staklene bašte. Prema nalazima Globalnog panela za klimu, najveća opasnost pretila je usled gomilanja i sve veće koncentracije ugljendioksida u atmosferi. Antropogeni faktor odgovoran je, smatra se, u najvećoj meri za taj opasni trend.

Kjoto protokol nije prošao sjajno u svetu tokom kakve-takve primene tokom poslednje decenije XX veka i prve XXI veka. Njegova primena je trebalo da bude zamenjena novim aktom 2012. godine. Pokušavalo se već na Baliju 2007. Nažalost, svetski lideri su se dogovorili samo to da se dalje dogovaraju. „Grupa 8“ na sastanku u julu 2008. pokušala je za svoj račun da radi na smanjenju emisije GHG. Po mišljenju Entoni Gidensa, akcija je poslužila više-manje kao pričaonica (Gidens, 2010). Lideri ove

requirements for the membership in the EU. A huge portion of these assumptions concerns the protection of the environment and the functioning of institutions - essentially harmonized and sustainable development of the society.

However, numerous issues and unsustainable trends had been previously accumulated both in the area of macroeconomics (budget and trade deficit, inflation, public debt, financial indiscipline...) and in the area of microeconomics, social systems and the environment... Namely, the corruption, tax evasion and poverty flourished, alongside with the increase in unemployment and poverty. It will take a lot of effort to reach required standards using knowledge-based economy.

## WILL THE SMART ECONOMY PREVAIL IN THE WORLD?

### Example of Climate Action

A test of a potentially positive link of knowledge-based economy and sustainable development is in action for almost two decades. “Climate Action” on a global scale began in the second half of 1997 by adopting the Kyoto Protocol. The key intention of this global agreement was to reduce the level of greenhouse gas emissions. According to the findings of the Global Panel on climate, the greatest threat was due to the accumulation and constantly increasing concentration of carbon dioxide in the atmosphere. It is believed that the anthropogenic factor is mainly held most responsible for such dangerous trend.

The implementation of the Kyoto Protocol was not a complete success in terms of its more or less successful application during the last decade of the twentieth century and during the first decade of the twenty-first century. Its application was meant to be replaced by a new act by 2012. Such attempts were made in Bali in 2007. Unfortunately, the world leaders agreed only to continue to negotiate. At the meeting held in 2008, “Group 8” attempted to perform the reduction of GHG emissions for their own account. Based on the opinion of Anthony Giddens, the action served more or less as a chat room (Giddens, 2010).

grupe najavili su smanjenje emisije ugljendioksida, kao i drugih gasova staklene bašte čak za 50% do 2050.

Skup u Kopenhagenu (decembra 2009) doneo je dogovor o povećanju finansiranja borbe protiv zagađenja na 30 milijardi dolara za sledeće tri godine, kao i cilj od 100 milijardi dolara pomoći nerazvijenim zemljama za borbu protiv uzroka i posledica globalnog zagrevanja do 2020. Međutim, izbio je spor između SAD i pojedinih zemalja OECD (dakle najrazvijenijih) i zemalja u razvoju oko načina finansiranja borbe protiv globalnih klimatskih promena. Ciljevi nisu konkretizovani na obaveze pojedinih zemalja. Razočarenje je bilo veliko, s obzirom na to da se očekivao čvršći politički dogovor, pa bio on i nesavršen" (www.nacional. 2009).

Krajem 2010. godine skoro 200 zemalja okupljenih na konferenciji UN o klimi u Kankunu (Meksiko) usvojile su dokument koji predviđa niz mehanizama za borbu protiv klimatskih promena, uključujući i osnovanje Zelenog fonda za pomoć zemljama u razvoju. Mada je komentarisano kako dogovor iz Kankuna "otvara novu eru u međunarodnoj saradnji u oblasti klimatskih promena", dokument je usvojen uprkos protivljenju Bolivije, pa je ostalo upitno da li je stvarno "pravilo za usvajanje konsenzus" i da se radi o "nesrećnom presedanu"...

## Energetika kao ključni deo testa

Danas je najveća odgovornost za to u sektoru energetike. Svima je u interesu da što je pre moguće i u što većoj meri pređu na obnovljivu i što čistiju energiju, kao i da unaprede energetsku efikasnost. Održiva energetika na svetskom nivou verovatno uzrokuje jednu od najgrandioznijih globalnih pozitivnih eksternalija, upravo kao i globalni ekološki i klimatski sporauzumi (Goodsein, 2003, str. 54). To je sasvim ispravno stanovište do određenog nivoa.

U uslovima krize, pravila slobodne razmene znanja i obostranog interesa pri korišćenju i kreiranju novih zelenih tehnologija i ekono-

The leaders of this group have announced a reduction in emissions of carbon dioxide as well as other greenhouse gases by as much as 50% by 2050.

The meeting in Copenhagen (in December 2009) brought a deal to increase the funding to fight the pollution to $30 billion for the next three years, and set a target of $100 billion to aid underdeveloped countries to combat the causes and consequences of global warming by 2020. However, a dispute arose between the United States and certain OECD countries (i.e. the most developed countries) with regards to the methods of financing the fight against global climate change. The objectives have been accepted, but no specific obligations of specific countries have been defined. The disappointment was great, considering that a firm political agreement was expected, even if it had been imperfect" (www.nacional. 2009)

At the end of 2010, nearly 200 countries gathered at the UN climate conference in Cancun (Mexico) adopted a document that provides a variety of mechanisms to fight climate change, including the establishment of the Green Fund to help developing countries. Although it was commented that the arrangement of Cancun "opens a new era in international cooperation in the field of climate change", the document was adopted despite opposition from Bolivia, therefore leaving the question of whether it actually represents " a consensus as a rule for the adoption" and that it was "an unfortunate precedent"...

## Energy as a key part of the test

Today, the greatest responsibility lies within the energy sector. It is everyone's mutual interest to convert to renewable and clean energy as soon as possible and as much as possible, as well as to improve energy efficiency. Sustainable Energy at the global level is likely one of the most grandiose causes of global positive externalities, just like the global environmental and climate agreements (Goodsein, 2003, p. 54). It is a completely correct position to a certain level.

In times of crisis, the rules of the free exchange of knowledge and mutual interest in the use and creation of new green technologies as well as

mije znanja se relativizuju. Tako se sve više razlikuju zemlje proizvođači „zelenih" energetskih tehnologija u odnosu na korisnike tih tehnologija. Ogromna sredstva uložena su u znanje i tehnike proizvodnje vetrogeneratora ili sunčanih panela, od Nemačke do Kine. Konkurencija je veoma živa na svetskom tržištu. Evropska unija u daleko većoj meri obavezuje svoje članice da povećaju udeo obnovljive energije, odnosno da smanje štetne energetske emisije i povećavaju energetsku efikasnost nego što je to slučaj u SAD, Kini, Indiji, ili, recimo, Rusiji, koja ključni prihod od izvoza bazira na prodaji nafte i gasa, kao glavnih komercijalnih energenata današnjice.

Bilo bi veoma nerazumno očekivati od Rusije ili Kine da naglo menjaju sopstvene razvojne strategije u pogledu korišćenja energenata, pa makar i na osnovu globalne akcije za klimu. Ovdašnja strateška pomeranja od pametnih ka više materijalizovanim i energeski zavisnim ekonomskim aktivnostima ima koren u krizi. Zemlje u razvoju, kao i zemlje u tranziciji, postupaju drugačije sa svojim resursnim potencijalima u kriznom vremenu u odnosu na ona prethodna vremena. Još nema saglasnosti oko klimatskih i energetskih ciljeva i standarda.

Konkretizacija pojedinačnih obavaza u novom dokumentu za klimu treba da se realizuje do kraja 2015. godine. U tom „dokumentu" koji bi zamenio Kjoto sprazum, konkretizacija globalnih ciljeva u vezi sa smanjivanjem emisije gasova staklene bašte, biće više-manje formalizovana. Samo je pitanje kako će se ponašati pojedini tvrdi pregovaračai poput SAD, Kine, Rusuje, tim pre što je današnje opasno zaoštravanje odnosa Rusije i zapadnih zemalja, veliki rizik da se išta kvalitetno na tom planu postigne.

Sa jedne strane stoje besparica (produžavanje krize), a sa druge energetska nestabilnost kao i opasna i sve više nepredvidiva kolebanja cena energenata na međunarodnom tržištu, kao i posebni intreresi pojedinih zemalja da ne napuštaju lako koncept konvencionalne energeije – sve su to uzroci usporavanja u razvoju ekonomije zasnovane na znanju, kao i globalnog sprovođenja koncepta održivog razvoja.

the knowledge economy are relativized. Thus, the countries - manufacturers of "green" energy technologies increasingly differ from the users of these technologies. Huge funds were invested in knowhow and techniques of manufacture of wind turbines or solar panels, from Germany to China. The competition is very much alive in the world market. The European Union obliges its members to increase the share of renewable energy and to reduce harmful energy emissions and increase energy efficiency, to a far greater extent than it is the case in the U.S., China, India or Russia, whose key income is based on the export sale of oil and gas, as major commercial energy sourced of today.

It would be unreasonable to expect from Russia or China to rapidly adjust their development strategies in terms of the use of energy sources, even on the basis of Global Climate Action. The local strategic shift from smart to more materialized and energy dependent economic activities is rooted in a crisis. Developing countries as well as the countries in transition, act differently with their resource potential in times of crisis compared to the previous prior to the crisis. There is still no consensus on the climate and energy goals and standards.

Concretization of individual obligations as a new document for the climate should be implemented by the end of 2015. Such "document" that would replace the Kyoto agreement shall more or less formalize the concretization of global goals related to reducing greenhouse gas emissions. The only question is the behaviour of certain hard negotiators such as the U.S., China and Russia, concerning that the current strained relations between Russia and the Western countries represent a high risk that any quality agreement may emerge in this area.

On one side there is shortage of money (prolongation of crisis), and the other - energy instability as well as dangerous and more unpredictable energy price fluctuations in the international market, as well as special interests of some countries not to easily abandon the concept of conventional energy - these are all reasons for the slowdown in development of knowledge-based economy, as well as in the global implementation of sustainable development.

## Šta činiti: opstanak ili održivi razvoj

Oko 1000 milijardi dolara godišnje u svetu ulaže se samo u energetiku. Od toga u klasičnu energetiku fosilanih goriva oko 600 milijardi, a u obnovljivu energetiku i ekološkle ciljeve enegetike svega 313 milijardi. Prema predlozima Svetskog saveta za energiju, stvari bi trebalo da teku obrnuto, tako da se do 2050, svake godine u „zelenu „ energiju i energetsku efikasnost ulaže po 1000 milijardi dolara, ili čak 35000 milijardi dolara ukupno, što po današnjim vrednostima iznosi oko polovine aktuelnog godišnjeg BDP sveta (Đukić, 2013).

Energetska efikasnost predstavlja jednu od najnoviljih izazova za čitav današnji svet koji ne može bez tehnološkog napretka. Tržišna privreda i globalizacija su direktno povezane.

To znači i da je ulaganje u energiju ukupno danas onoliko koliko bi trebalo da iznosi samo ulaganje u obnovljivu energiju i ekologizaciju energetike. Te dve stvari se ni u kom slučaju ne isključuju. Tako, na primer, najnovije termoelektrane na ugalj podrazumevaju i mogućnosti novih tehnologija sagorevanja uglja u prahu, odnosno korišćenje tzv. pulverizovanog uglja[2] a tom prilikom se podiže efikasnost iskorišćenja i smanjuje štetna emisija. Drugi način je „zarobljevanje“ emitovanog ugljendioksida i njegovo skladištenje u zemlju koje se već u svetu vrši. Ima još mnoštvo načina kojima bi pametna ekonomija, prvenstveno podelom tehnoloških rešenja i razmenom znanja u svetu, mogla da doprinese održivosti globalne energetike i smanjenju rizika velikih geofizičkih promena.

Klimatski paket promena i kontra-mera u svetu povezan je samo naizgled najviše sa energetikom, životnom sredinom i resursima. Naime, posredno one pogađaju mnoge druge vitalne aktivnosti kao što su: poljoprivreda,

2 Reč je o dobijanju metanola od uglja tzv. pulverizacijom koja podrazumeva dobijanje sintetičkog gasa (syngas) i likefijaciju pod pritiskom pare, tako da se sjedinjavanjem tog produkta sa vodonikom dobija methanol, koji se dalje može mešati sa naftom, ili koristiti za dobijanje električne energije.

## What to do: survival or sustainable development

About $1000 billion annually is invested in the energy alone. From that number, about $600 billion is invested in the classical energy if fossil fuel and only about $313 billion in the renewable energy and environmental goals of energy sector. According to the proposals of the World Energy Council, the situation should flow the other way around, so that by 2050, every year about $1000 billion or even $35000 billion in total should be invested in "green" energy and energy efficiency, which by the current value is about half of the current annual world GDP (Đukić, 2013).

Energy efficiency is one of newest challenges for the entire world which cannot do without technological progress. The market economy and globalization are directly related.

This means that investment in the energy of today is as much as the investment in renewable energy and ecologisation of energy should be. These two subjects by no means exclude each other. So, for example, the latest coal-fired plants include the possibilities of new powder coal combustion technologies, or the use of the so-called pulverized coal[2] which increases the efficiency of utilization and reduces harmful emissions. Another way is "capturing" emitted carbon dioxide and storing it underground, which is already being done in the world. There are plenty of methods that would enable the smart economy, particularly by distributing technological solutions and sharing knowledge worldwide could contribute to the sustainability of the global energy and reduce the risk of large geophysical changes.

Package of Climate Changes and counter-measures worldwide is only seemingly linked primarily to energy, environment and resources. Namely, they indirectly affect many other vital activities such as agriculture, trans-

2 It is about getting the methanol from coal so. The pulverization of the preparation, which involves a synthetic gas (syngas) and likefijaciju pressure steam, so as to amalgamate the product obtained with hydrogen methanol, which can be further mixed with the oil, or used to generate electricity.

saobraćaj, šumarstvo, građevinarstvo, industrija... Kao karakteristika i potencijal moderne civilizacije, globalizacija može da doprinese rešavanju problema i uklanjanju prepreka za saradnju i razumevanje, odnosno trgovini, inovacijama i znanju sa jedne strane, ali, isto tako, i da deluje zbunjujuće i stvara nove probleme, podele i rizike, naročito ljudima koji od nje strahuju i gube. Izazovi globalizacije ostaju i dalje kao „dva lica boga Janusa“, šansa ili pretnja (Đukić, 2011, str. 253). Sve zavisi od toga da li će svet uspeti da položi ključni ispit budućnosti – da upravlja potrebama populacije od 9 milijardi ljudi, već sredinom XXI veka.

Današnja globalna scena, naročito pod pritiskom ukrajinske krize, nosi velike neizvesnosti, usporava pozitivne impulse koje nude nova tehnološka rešenja i saradnja zemalja, ne samo na polju održive energetike, ili akcije za klimu. Mnoga pitanja i probleme valja rešavati zajedno i uz više saradnje i razumavanja.

Pametna ekonomija morala bi da nalazi tehnološki i ekonomski upotrebljiva rešenja za probleme vodosnabdevanja, životnog prostora, vremenskih i prirodnih katastrofa, ishrane i gladi, novih zaraznih bolesti i ko zna kojih sve iskušenja koje donosi budućnost klimatskih i drugih promena na zemljiu. Održivi razvoj kao koncept usaglašavanja i preklapanja različitih, a pre svega ekonomskih, socijalnih i ekoloških ciljeva, nije istrošen i neupotrebljiv model. U cilju njegove konkretizacije teško i mukotrpno se traže i pronalaze u suštini, kompromisna, rešenja. Nijedna kriza ne može biti razlog da se za takvim rešenjima prekine traganje kako na nacionalnom tako i na regionalnoom i globalnom planu. Sadašnja generacija ljudi na Planeti nema ni politički ni moralni mandat da se kocka sa sudbinom budućih generacija.

port, forestry, construction, industry... As a feature and potential of modern civilization, globalization can contribute to solving problems and removing barriers to cooperation and understanding, i.e. trade, innovation and knowledge, but also to act confusing and create new problems, divisions and risks, particularly to people who are afraid of it and eventually lose. Globalization challenges remain as “two-faced god Janus,” a chance or a threat (Đukić, 2011, p. 253) . It all depends on whether the world will be able to pass the key test of the future - to manage the requirements of 9 billion people, by the middle of the 21st century.

Today’s global stage, especially under the pressure of the Ukrainian crisis, carries a lot of uncertainties, slowing down the positive impulse offered by new technological solutions and cooperation between countries, not only in the field of sustainable energy or Climate Action. Many issues and problems should be solved together with increased level of cooperation and understanding.

Smart economy would have to provide technologically and economically useful solutions for the problems of water supply, living space, weather and natural disasters, nutrition and hunger, new infectious diseases and who knows what other temptations of the future regarding climate and other changes to the country. Sustainable development as a concept of conciliation and overlay of different, particularly economic, social and environmental objectives, it is not an outdated and useless model. For the purpose of its concretisation, searching and finding, mainly compromise solutions is quite difficult. No crisis can be the reason to stop searching for such solutions both on a regional and on a global level. The current generation of people on the Planet has neither a political nor a moral mandate to gamble with the fate of future generations.

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