

An Investigation Of Relation Between Sustainable Development And Quality Of Life

Slavko Arsovski¹
Milan Pavlović²,
Zora Arsovski,
Zoran Mirović

¹ Faculty of Mechanical Engineering, Kragujevac,
² Technical faculty "Mihajlo Pupin" Zrenjanin.

Abstract: Sustainable development and quality of life are today very important paradigms in the world. Each of them has its own structure, hierarchy, methodology for management, monitoring and study. Because both of them had its own development courses there are many differences related with different purposes. Sustainable development is connected with regional and macro level. It covers many aspects of development strategy directed to sustainable state. Quality of life has to a certain extent the same direction – an objective measure of achieved performances of life as GDP per capita, school system etc. The second part of Quality of life is expressed by many indicators about achieved wishes, values attitudes etc. Although there are many similarities between both paradigms, differences are on level of concept, structure, measurement, monitoring and analysis. Authors in the paper try to override the skeletons of both paradigms. The paper considers in this perspective three important stages in the building of QOL and SD indicators: the identification of the various dimensions underlying mentioned concepts, the process of aggregating lower dimension indicators in higher level composite indices and the attribution of weights at various levels of the indicators hierarchy.

Keywords: Sustainable development, quality of life, conceptual modeling

1. INTRODUCTION

Quality of Life (QOL) and Sustainable Development (SD) are areas of study which have attracted an ever increasing amount of interest. The purpose of the paper is analysis of relations between mentioned paradigms.

The investigation of relations between Quality of Life and Sustainable Development is relatively new avenue of research. Defining mentioned relations could help integration of the social and scientific policy programs and hence providing double benefits.

Sustainable development can be defined as a pattern of resource use aspiring to

meet human needs while preserving the environment so that mentioned needs can be satisfied not only in the present, but also for future generations to come. Sustainability is a process which tells of a development of all aspects of human life affecting sustenance. Sustainability involves the simultaneous pursuit of economic prosperity, environmental quality, social equity and culture.

For the purpose of the paper Quality of Life can be defined as fulfillment of needs and feeling well about it. The study of Quality of Life is an examination of influences upon the goodness and meaning in life, as well as people's happiness and well-being. The ultimate

goal of quality of life study and its subsequent applications is to enable people to live quality lives that are both meaningful and enjoyed.

QOL and SD indicators, pointed out in the paper are scientific constructs whose principal objective is to inform public policy-making. The paper considers in this perspective three important stages in the building of QOL and SD indicators: the identification of the various dimensions underlying mentioned concepts, the process of aggregating lower dimension indicators in higher level composite indices and the attribution of weights at various levels of the indicators hierarchy.

Debates about globalization in both development and international relations continue. It is difficult to determine which aspect of globalization is faster: the globalisation debates or globalisation process itself. Emergent logic of globalization stresses the complexities and attendant interdependences created by the dynamic aspect: movement of goods, services, people, ideas and influences across national borders.

In this context there are a lot of challenges. Two of them are subject of this paper: sustainable development (SD) and

Quality of Life (QOL). Because their importance and leading values and concepts, they have also status of paradigms.

2. SUSTAINABLE DEVELOPMENT FRAMEWORK

Sustainable development focuses on human activities with respecting nature and natural systems. According [1] SD is "the process of meeting the needs of current and future generations without undermining the resilience of the life – supporting properties of nature and integrity and security of social systems". This definition implies that SD refers to the nature of ecological systems, the type of economic activities, modes of governance, and institutional performance.

Because their complexity, SD can describe as intersection of domains and dimensions. Differentiation of 14 interconnected domains by generic type is presented in Figure 1.

Table 1 – Domains of SD

Demographic domain	Population Dynamic
	Urbanization
	Migration and Dislocation
	Consumption patterns
Energy and natural resources domain	Unmet basic needs
	Energy use and source
	Forests and land uses
	Water uses and sources
Technology – centered domain	Agricultural and rural activities
	Trade and Finance
	Industry and Manufacturing
Domain of decisions and choices	Mobility and Transport
	Conflict and War
	Governance and Institution

Each of 14 domains is presented as slice of one circle. On other hand, each of domain has own content – specificity. So, an example, Industry and Manufacturing has own structure []:

I. Activities and Conditions

A. Industry and Manufacturing

1. Final products

a) Construction

b) Mining, extraction, processing

c) Manufacturing

d) Energy industries

e) Electronics and electronic industries

f) Paper and pulp

g) Automotive and transport industries

2. Intermediary products and processes
 - a) Industrial operations
 3. Supplier systems and networks
 4. Waste-related industries
- II. Sustainability Problems
- A. Environmental impacts
 1. Impacts on land, water, air, and underground spaces
 - a) Air pollution
 - b) Water, river ways, aquifers, and marine pollution
 - c) Soil degradation
 - d) Chemical changes
 - e) Reduced visibility and smog effects
 2. Specific modes and mediums of pollution and dislocations
 - a) Acid rain
 - b) Emission of trace metals
 - c) Other toxic emissions
 3. Threats to life-supporting properties
 - a) Los of habitat
 - b) Deforestation
 - c) Damages to marine life
 - d) Reduction of biodiversity
 - B. Climate change
 1. Greenhouse gas emissions
 2. CFC impacts and ozone depletion
 3. Interactine effects of GHG
 - C. Hazards and wastes
 1. Solid and non-solid wastes
 2. Safety, health, and related hazards
 - D. Socioeconomic dislocations
 1. Economic impacts
 - a) Income effects
 - b) Employment effects and unemployment
 2. Social and political impacts
 - a) Demogaphic dislocations
 - b) Quality of life impacts
 - c) Urbanization strains
 3. Consumption of non-renewable resources
 - a) Energy resources
 - b) Mineral resources
 - c) Other natural resources
- III. Scientific and Technical Solutions
- A. Designing for environmental
 1. Industrial ecology
 2. Life-cycle analysis
 3. Industrial metabolism
 4. Input-output mechanisms
 - B. Best S and T practice
 1. Substitution and design alternatives
 - a) Pertaining to functions
 - b) Pertaining to products
 - c) Pertaining to entire production process and products
 - d) Pertaining to sales of products or of function
 2. Cleaner production
 3. Strategies toward waste and discharges
 - a) Waste minimization
 - b) Waste management
 - c) Waste as raw material
 4. Eco-efficiency
- IV. Social, Economic, Political, and Regulatory Solutions
- A. New principles and best practice
 1. Polluter pays principle (PPP)
 2. Pollution prevention
 3. Eco-labeling
 4. Prior informed consent (PIC)
 5. Separate, but differentiated responsibility
 6. Other evolving principles
 - B. Green regulation and legislation
 1. Formal regulations
 - a) Improved standards and codes
 - b) Harmonization policies
 2. Voluntary restrictions and regulations
 3. Informal regulations
 - C. Market strategies
 1. Incentives for greening
 - a) Target of incentives
 - b) Instrument of incentives
 2. New market instruments
 - a) Emission trading
 - b) Financial instruments
 - c) Insurance strategies
 - d) Other instruments
 - D. Full cost accounting
 1. Targeted to activities and agents
 - a) For economies and firms
 - b) For tradable and non-tradable
 2. Related to requirements for undertaking full cost accounting
 - a) Education of public and industrial workers
 - b) Training programs
 - c) Experimental and innovative accounting mechanisms

Those domains are disaggregated into set of dimensions and represented as concentric circles, from the smallest to the biggest:

- activities,
- problems,
- technical solutions,
- social solutions and

- inyyyyatioöyyl response.
Graphiyyyyreyyesyttatiyyyyf sustainabiyytyyyys yyown on fig. 1 with:
- slice: Domyyñ of Core Concept,
- ring: Dimension of Problem and Solution and
- cell: Granular Manifestation.

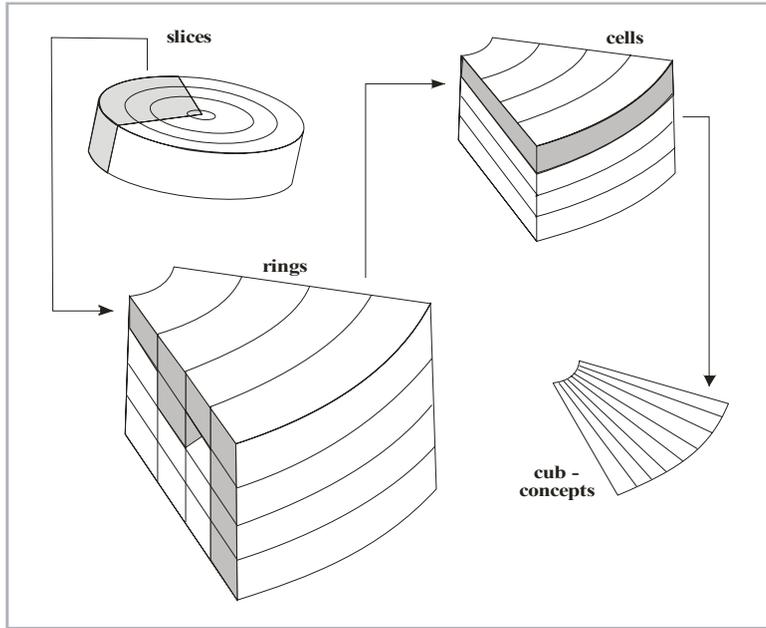


Figure 1 – Linkages across the conceptual framework of SD

3. QUALITY OF LIFE FRAMEWORK

Quality of Life (QOL) is "degree to which a person enjoys the important possibilities of his or her life" [3]. But why has SD not been successful although it is heavily used by different actors, such as politicians and scientists?

One reason is – in our opinion – that SD is a rather technocratic concept, which does touch our brains but rarely our hearts. As a transition towards SD requires efforts from everybody, big structural changes in our economic system, strong political decisions and in the end also changes of lifestyles, habits and behavioral patterns, it (the transition) has to be wanted, really wanted. And in order to really wish something, we have to be touched in our hearts.

What if we put our focus more on needs? The fulfillment of needs and feeling well about it is the key to reach a high Quality of Life (QOL). QOL can be defined as having two components:

- Objective conditions: the resources that a person has, including the real opportunities to use these resources to meet one's needs; in figure 1 this is represented by the 'capabilities' approach;
- Subjective experience: experience of one's capabilities and the fulfillment of these needs; in Figure 2 this is represented by concepts of 'well being'.

Concepts of well being explicitly include emotions and feelings. Thus, our hypothesis is: "If a transition towards SD leads to a higher or maintain a high QOL for

everybody now and in future, then the emotional side of humans can be touched and this can make the transition real.”

In our approach SD is linked to the capabilities approach (A. Sen and M. Nussbaum), research on lifestyles, well being,

happiness and quality of life and needs. The latter take a central position in our approach and refer to one of the great thinkers and doers in Ecological Economics, Manfred Max Neef. His matrix on needs and satisfiers is one of the keystones of our concept (table 1).

Table 1: Matrix of needs and of four categories of strategies (satisfiers), adapted from Max-Neef et al. (1991: 32-33)

Axiological categories Fundamental Human Needs	Being (qualities)	Having (things)	Doing (actions)	Interacting (settings)
Subsistence	physical and mental health	food, shelter, work	feed, clothes, rest, work	living environment, social setting
Protection	care, adaptability, autonomy	social security, health systems, work	co-operate, plan, take care of, help	social environment, dwelling
Affection	respect, sense of humor, generosity, sensuality	friendships, family, relationships with nature	share, take care of, make love, express emotions	privacy, intimate spaces of togetherness
Understanding	critical capacity, curiosity, intuition	literature, teachers policies, educational	analyze, study, meditate, investigate,	schools, families, universities, communities,
Participation	receptiveness, dedication, sense of humor	responsibilities, duties, work, rights	cooperate, dissent, express opinions	associations, parties, churches, neighborhoods
Leisure	imagination, tranquility, spontaneity	games, parties, peace of mind	day dream, remember, relax, have fun	landscapes, intimate spaces, places to be alone
Creation	imagination, boldness, inventiveness, curiosity	abilities, skills, work, techniques	invent, build, design, work, compose, interpret	spaces for expression, workshops, audiences
Identity	sense of belonging, selfesteem, consistency	language, religions, work, customs, values, norms	get to know oneself, grow, commit oneself	places one belongs to, everyday settings
Freedom	autonomy, passion, selfesteem, open mindedness	equal rights	dissent, choose, run risks, develop awareness	anywhere

Figure 2 shows how we see the links between the different concepts.

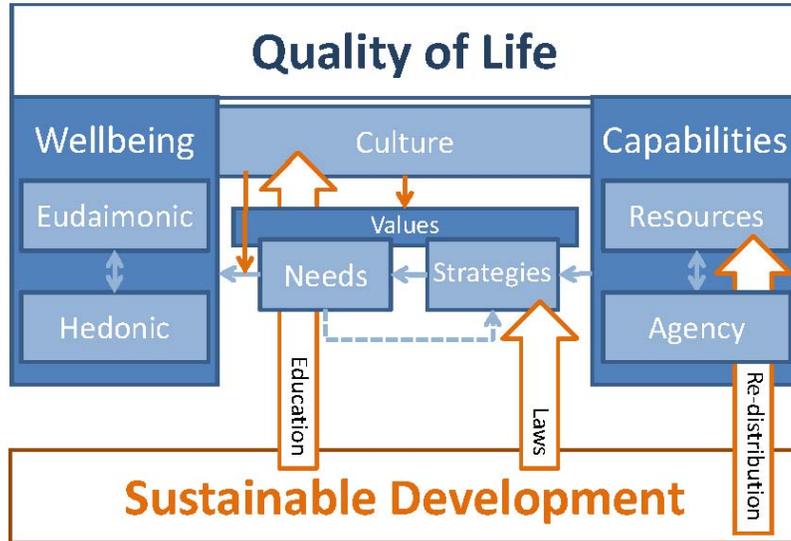


Figure 2: Quality of life and sustainable development

While Quality of Life (QOL) has long been an explicit or implicit policy goal, adequate definition and measurement have been elusive. Diverse “objective” and “subjective” indicators across a range of disciplines and scales, and recent work on subjective well-being (SWB) surveys and the psychology of happiness have spurred renewed interest. Drawing from multiple disciplines, we present an integrative definition of QOL that combines measures of human needs with subjective well-being or happiness. QOL is proposed as a multiscale, multi-dimensional concept that contains interacting objective and subjective elements. We relate QOL to the opportunities that are provided to meet human needs in the forms of built, human, social and natural capital (in addition to time) and the policy options that are available to enhance these opportunities. Issues related to defining, measuring, and scaling these concepts are discussed, and a research agenda is elaborated. Policy implications include strategies for investing in opportunities to maximize QOL enhancement at the individual, community, and national scales.

Enhancing Quality of Life (QOL) has long been a major explicit or implicit life-style and policy goal for individuals, communities, nations, and the world. But defining QOL and measuring progress towards improving it have

been elusive. Currently, there is renewed interest in this issue both in the academic and popular press. A search of the Institute for Scientific Information (ISI) database from 1982-2005 reveals over 55,000 academic citations utilizing the term “quality of life,” spanning a large range of academic disciplines. In the popular press, quality of life is also a critical element in the ongoing discourse on economic prosperity and sustainability, but it has often been subsumed under the heading of “economic growth” under the assumption that more income and consumption equates to better welfare. This equation of consumption with welfare has been challenged by several authors, notably Sen (1985) and Nussbaum (1995) and is now also being challenged by recent psychological research (Diener and Lucas, 1999; Easterlin, 2003).

Alternative measures of welfare and QOL are therefore actively being sought. For example, both the New York Times and the Wall Street Journal have carried articles about the country of Bhutan’s decision to use “Gross National Happiness” as their explicit policy goal rather than GNP. Recent research on QOL has focused on two basic methodologies of measurement. The First—termed “subjective well-being” (SWB)—focuses upon self-reported levels of happiness, pleasure, fulfillment and the like (see Diener and Lucas

(1999) and Easterlin (2003)). The other utilizes so-called “objective” measurements of QOL—quantifiable indices generally of social, economic, and health indicators (UNDP, 1998)—that reflect the extent to which human needs are or can be met. For example, objective measures include indices of economic production, literacy rates, life expectancy, and other data that can be gathered without directly surveying the individuals being assessed. Objective indicators may be used singly or in combination to form summary indexes, such as the UN’s Human Development Index (Sen, 1985; UNDP, 1998). While these measurements may provide a snapshot of how well some physical and social needs are met, they are narrow, opportunity-biased, and cannot incorporate many issues that contribute to QOL such as identity, participation, and psychological security. It is also clear that these so-called “objective” measures are actually proxies for experience identified through

”subjective” associations of decision-makers; hence the distinction between objective and subjective indicators is somewhat illusory.

Quality of Life (QOL) is the extent to which objective human needs are fulfilled in relation to personal or group perceptions of subjective well-being (SWB, Figure 3). Human needs are basic needs for subsistence, reproduction, security, affection, etc. SWB is assessed by individuals’ or groups’ responses to questions about happiness, life satisfaction, utility, or welfare. The relation between specific human needs and perceived satisfaction with each of them can be affected by mental capacity, cultural context, information, education, temperament, and the like, often in quite complex ways. Moreover, the relation between the fulfillment of human needs and overall subjective well-being is affected by the (time-varying) weights individuals, groups, and cultures give to fulfilling each of the human needs relative to the others.

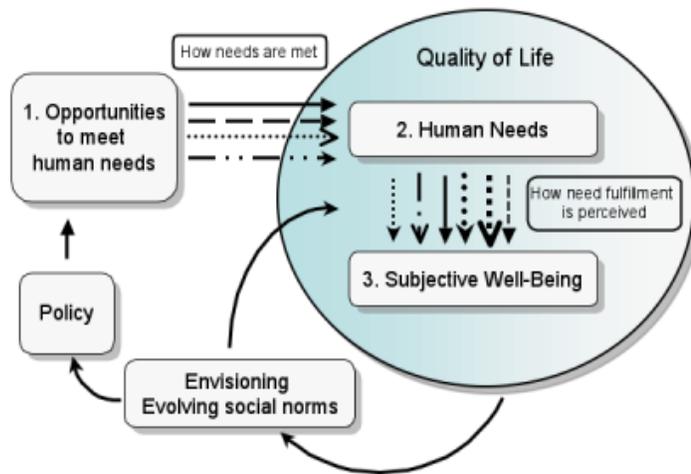


Figure 3. Integrative model of QOL

Quality of Life (QOL) is represented as the interaction of human needs and the subjective perception of their fulfillment, mediated by the opportunities available to meet the needs.

4. SD AND QOL AS MAGIC COUPLE

Each domain and dimension in SD

model is connected to different aspects of QOL. An example, domain: Industry and Manufacturing, sub domain: final products from manufacturing with dimension sustainability problems in air and water pollution and soil degradation is connected to scientific and technical solutions with waste management. Fourth extensions of dimensions is social, economic, political and regulatory solutions through pollution prevention, improving standards, brand education, and market strategies (Fig. 4).

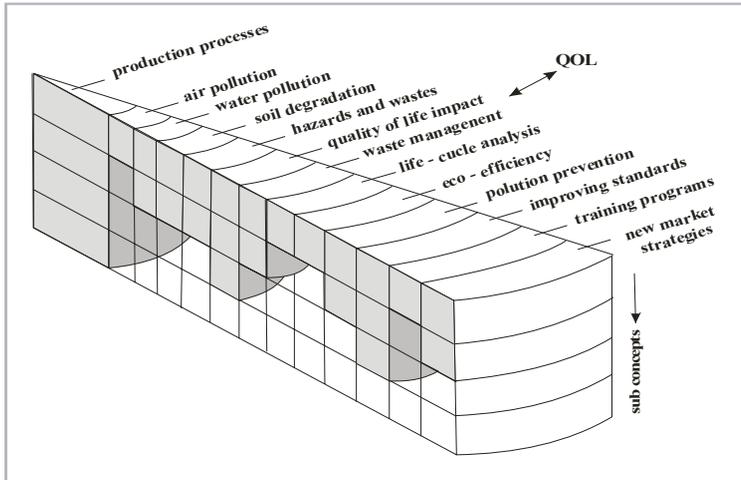


Figure 4 – Intersection of domains and dimensions for automotive industry (A11.g)

In this model of SD connection to QOL is quality of life impact (directly) and other dimensions (indirectly). Broader model of integration SD and QOL modules is shown on Figure 5. Each relation is very complex. An example, in recycling of end-of-life vehicles,

waste management (from SD frame) is related to economic welfare, employment, culture, environment, social security, transport and accessibility (from QOL form) as presented on Figure 6.

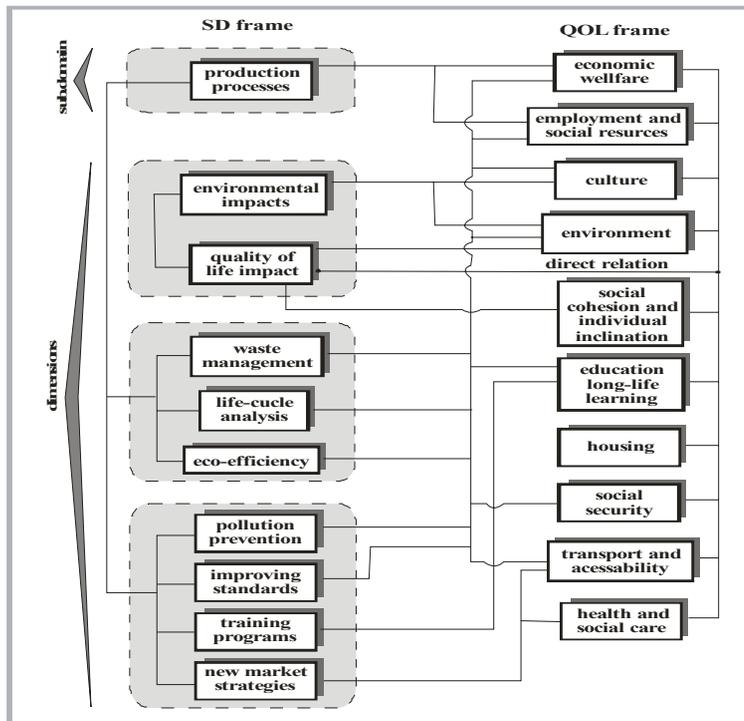


Figure 5

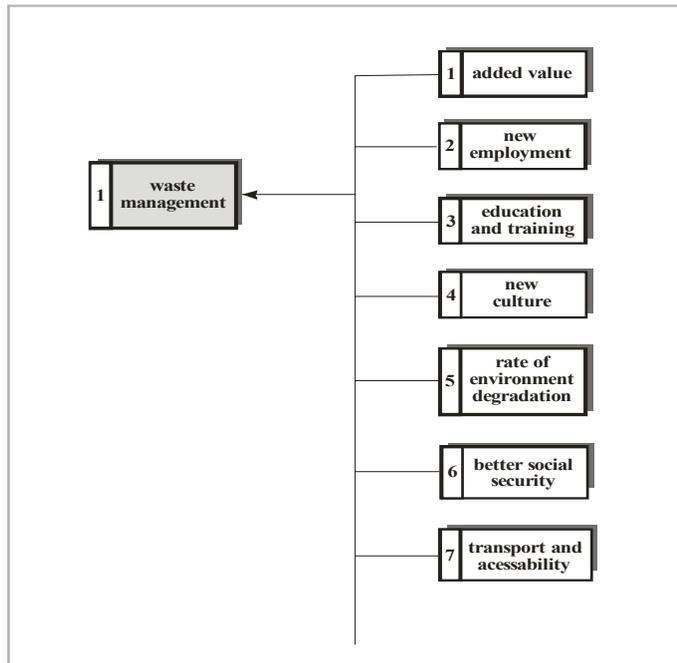


Figure 6 – Relation between SD and QOL in section of End of life vehicles

One of the most important relations is influence of intensity of waste management on economic value, expressed as added value. According

results of the project supported by Ministry of Science of Serbia, expected effects of waste management in Serbia as in Figure 7.

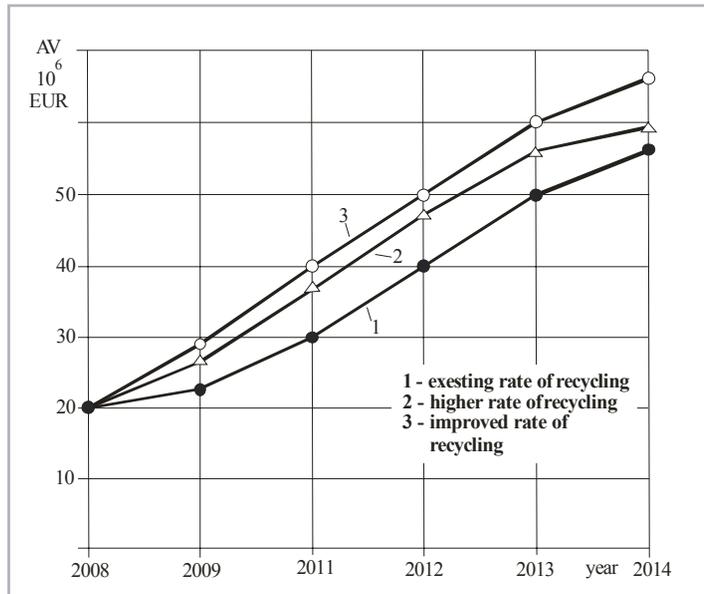


Figure 7

Achieved economic new (added) value vice versa influences on waste management through different dimensions, as new sustainability strategies, new technology

solutions, or eliminating hazardous materials.

In Figure 8 is presented new employment with different organizational forms and technologies of recycling.

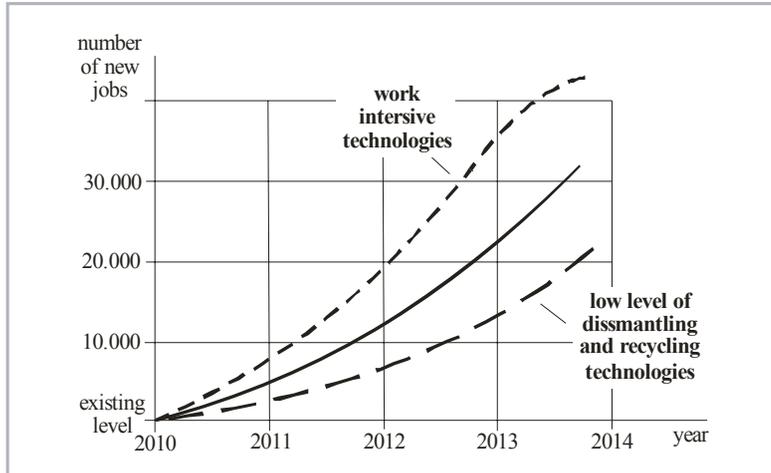


Figure 8 – Expected new jobs from recycling of vehicle in Serbia

Better social security is expected because in this area working traditionally less education and marginalized persons and with new jobs social pressure becomes low and social security of them and other people is higher, because this job is sustainable in long term period.

5. CONCLUSIONS

QOL and SD indicators, pointed out in the paper are scientific constructs whose principal objective is to inform public policy-making. The paper considers in this perspective three important stages in the building of QOL

and SD indicators: the identification of the various dimensions underlying mentioned concepts, the process of aggregating lower dimension indicators in higher level composite indices and the attribution of weights at various levels of the indicators hierarchy.

Each domain and dimension in SD model is connected to different aspects of QOL. An example, domain Industry and Manufacturing, sub domain: final products from manufacturing with dimension sustainability problems in air and water pollution and soil degradation is connected to scientific and technical solutions with waste management.

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