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Greening of Boardrooms: Influence Factors for Greening Decisions in Real Estate Sector in India

Pundir Manju Baisoya[*], Dr. Singh Sanjeev[*]
[*]PhD Scholar, School of Planning and Architecture, Bhopal, Madhya Pradesh, India,manjupundir@gmail.com
[**]Professor, School of Planning and Architecture, Bhopal, Madhya Pradesh, India,ssingh@spabhopal.ac.in

ABSTRACT
Real estate sector in India is in a stage of transition towards 'green'-which is seen as a popular term for adopting higher sustainability goals for development projects. These sustainability goals include responses towards energy efficiency, resource minimization and ecological planning considerations. Real estate developers, planning and design professionals along with technology experts have been adopting sustainability practices for various reasons. What guides these decisions is a mix of cost, stakeholder pressure, market dynamics, environmental regulations as well as willingness of the leadership to change. The ethical and business case for environmental sustainability or 'greening' decisions have an unclear borderline both in theory and practice. This paper, with the help of a perception survey involving sector experts and drawsinferences to identify the key influence factors in the form of drivers and barriers to greening decisions in real estate sector in India.
Key Words **-** Corporate Sustainability Decisions, Green Real Estate, Environmentally Responsible Developments, Sustainability Decision Making, Green Construction

I. INTRODUCTION

Green real estate is no more a stark paradox of words. Greening decisions in real estate refer to various planning, design and technological approaches towards environmental sustainability practices. A number of sustainability reporting measures as well as assessment tools and frameworks have been available for planners and designers and therefore decision making in real estate sector is being influenced by the greening movement. This trend is visible in various eco-city projects, green buildings and townships and climate positive developments. In India, the construction industry plays an important role in contributing to the national GDP and the real estate sector in commercial and residential are high growth asset classes with genuine primary demand. However, construction of new buildings is directly related to high energy consumption and high contribution to GHGs. Therefore, there is a very high opportunity to shift to green buildings and green developments to significantly reduce the impact on the environment and natural resources.

The sustainable development concept is vast and incorporates the social economic and environmental aspects to be considered in planning. Greening though can be broadly understood as the environmental pillar of the sustainability concept. Though conceptually it is understood in its entirety,sustainable development has been considered difficult to operationalize and brought to practice. Greening in recent times in construction projects is being practiced under various scientific approaches which points to the need to better characterize the amount of materials stored as stock within the urban system – buildings, roads, infrastructure -- and the flows into cities and out of them[1]. To address the issue of this increasing urban metabolism; that is the increasing amount of materials and energy being consumed by the urban areas; is being addressed through a variety of initiatives, the prominent one of which are the eco-city developments that have been called as practice led initiatives and is becoming more mainstream in policy and regulatory processes across the world [2]. These eco-cities have been focusing on renewable energy, water and waste management and also provision of public and green modes of transportation.

However, it is important to note that the decision to adopt these sustainability initiatives is entirely dependent upon the decision makers or the internal stakeholders that operate under neo-liberal urbanism frameworkand setup led by market and profitability. Increasingly, green building construction and green development as a whole, is prerogative of the private developers, who face a major challenge of increased construction costs in

some cases and a perception change in others. In India real estate at building as well as neighborhood level has been fast adopting the path of commercial performance rating systems to mark themselves as green. This is in line with the stakeholder's attitude to address the market demand as well as the regulatory and policy changes. This paper takes help of market survey to take into account the various drivers and barriers for adoption of environmental strategies, sustainable planning and green initiatives in real estate sector in India.

II. GREENING DECISIONS IN REAL ESTATE: LITERATURE REVIEW

In real estate sector, green agenda relates to adopting sustainable strategies for building and land development. This includes theapproaches taken up by developers to achieve environmental goals toimprove long-term profitability and gain sustainedcompetitive advantage [3]. Decision theories discuss that the distinction between normative and descriptive decision theories is, in principle, very simple. A normative decision theory is a theory about how decisions should be made, and a descriptive theory is a theory about how decisions are actually made [4] Real estate firms, like any other business enterprises, work towards persistent value creation [5] and it has been observed that the greening agenda in real estate though is attributed to having positive impacts on the environment and sustainability of the development, its motivation has roots in financial viability for the developing firm. [6].

Green buildings and green developments, by way of adopting green and clean technologies, have been associated with lifecycle cost savings and significant financial benefits [7]. Many studies have demonstrated that green buildings save energy [8] and achieve better long term performance [9], in other terms, green buildings, green construction and green development has been related to financial benefits for the developers. However, financial benefits in the longer run may be the most important but not the only motivating factor for a real estate developer to make a decision to adopt green technologies or strategies for their project. The overall corporate environmental proactivity is characterized by external and internal drivers [10].

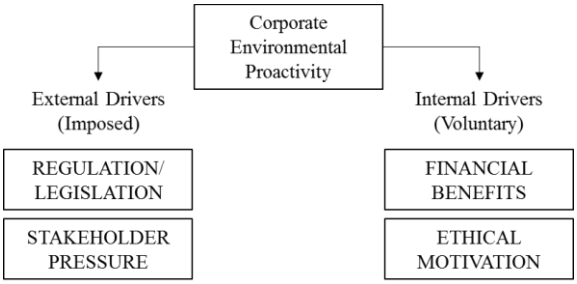

Figure 1: Driver of corporate environmental proactivity [10]

The external drivers relate to imposed behavior, which includes regulations and stakeholder pressures and internal driver relate to voluntary behavior, which includes economic opportunities and ethical motivation (Fig 1). The external influence may come from different groups of stakeholders like government, local communities, environmental organizations, material suppliers and employees of a company, whereas the internal influences relate to specific organizational structure of the firm and its leadership. [11]

According to the social cognitive theory (Fig 2) the basicintentions guide actions in any field, and intention is understood as a proactive commitment to bring about change [12]. However, Motivation plays an important role in directing any particular individual's action [13]. The right motivation, therefore, will help the decision makers to enter into green construction and will serve as the platform upon which expectation is created [14]. There is a visible increase in awareness among real estate developers regarding greening strategies, however, action in the form of implementation shall depend upon the motivation levels, which in turn have been related to higher investment costs, though, implementation is different matter. From previous studies it was found that many developers stated that the greatest obstacle to green construction is the higher investment cost that may incur and the risk of unforeseen cost [15].

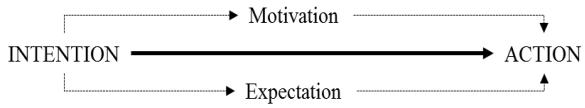

Figure 2: Social Cognitive Theory

Transition theories suggest that the process of change towards sustainability is a path where the life sustaining sources are declining and there is an increasing societal demand for these resources, this transition therefore cannot be seen as a linear process. Transition or change from one stable regime to another stable regime is conceptualized as occurring when the existing or dominant regimes are destabilized due to certain changes in the landscape or environment in which the regime evolves [16]. This implies a non-linear process of change that is enhanced by the creation of new technological and innovation niches after passing critical thresh holds [17]. The three inter-related levels: "Regime, landscape and niches are crucial in understanding the process of transition. Regimes are the dominant rule-sets, landscapes are the geo-socio-political environment and niches are small spaces protected from the dominant regime where technological innovations can happen" [18].

This transition approach to sustainable development deals with complex societal and adaptive systems experiencing persistent problems that require a fundamental shift [17]. It is understood that this transition process can be strengthened or weakened by factors viz drivers and barriers, that affect the landscape or the geo-socio-political environment (Fig 3). Regulation can drive innovative solutions, or economic opportunities in terms of cost savings can drive green strategies to gain a firm's reputation or ethical motives may be responsible for a longer term sustainability drive of a real estate firm. Therefore, as observed that various quantitative and qualitative factors can influence decisions in real estate development projects and it is impossible to predict or forecast the outcomes and eliminating the financial risks involved [19].

Greening decisions are influenced by many factors external and internal to the development organization or firm. These influence factors can be positive i.e. pushing the decision towards adopting the environmental sustainability initiatives or negative i.e. pulling the decisions away from the sustainability goal. In principles these driver and barriers are external and internal both and vary from policy level macro influences to firm level decisions. They also vary from a collective decision to an individual's or a small group's initiative. It is therefore extremely important to understand these influence factors in light of sustainability initiatives and the extent to which these influence factors may help or restrain a decision towards environmental sustainability.

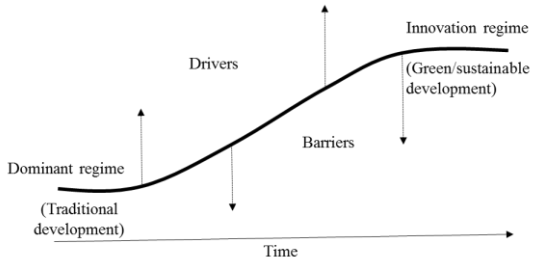

Figure 3: Sustainability Transition

III. INFLUENCE FACTORS FOR GREENING DECISIONS

For this study, a market surveywas taken up to understand the present and pressing barriers and drivers in real estate decision making towards higher sustainability goals. The survey was designed as an online tool to record perceptions of field experts andascertain the extent to which the perceived influence factors play a role in decision making for 'greening' in planning stages.This studyhelped to gain insights on how these field experts place the relationship of environmental sustainability to key decision making processes and also helped to understand their view on the role of government and private developers in advancing the adoption of concepts and tools of environmental sustainability.The research questions addressed the present status and general opinions about environmental or greening responses, perception ranking for key drivers and barriers and key implementation tools (policy, planning and fiscal) that can enhance the green decision making.

3.1 Present Status for Greening Strategies

Real estate developers are guided by a number of regulatory and policy level frameworks for their environmental decisions and to understand the extent to which these developers are actually focused in implementing the environmental management systems (EMS) at their firm level, a direct question was asked the field experts as to how many developers in India have an environmental management system in place at a firm level or at a project level? In addition it was asked in their opinion how many developers in

India include environmental sustainability indicators at the master planning stages.

The expert's opinion has been conservative in terms of existing situation, where most experts feel that less than 5% and up to 25% of the developers in India either use or are willing to use an indicators system for planning.Most of the experts also feel less than 5% and up to 10% of developers are willing to calculate the energy and water consumption, emissions and waste production in a proposed new project. Less than 5% and up to 10% of developers have an EMS in place at project level (Fig4). These figures show that the majority of developers are still dependent upon the traditional planning tools and the trends for including fundamental environmental sustainability parameters and practices at the planning level are still to become a regular norm.

Varied reduction in environmental loads can be achieved in real estate development projects at various stages.There seemed a consensus among all experts that if the environmental sustainability practices are included right at the master planning stages, maximum reduction in the environmental loads can be achieved (Table 1).

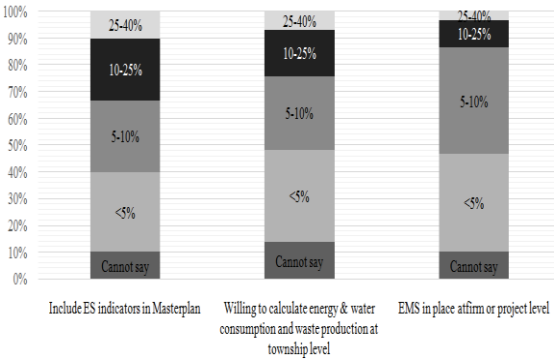

Figure 4: Willing to include greening strategies in project development

Table 1: Green decisions Impacts and interventions

Stage of a real estate project	Impact of Green Decisions	Interventions Required
Master planning and design stage	Maximum	Conscious decision making and vision
Construction stage	Moderate	Choices for materials guided by planning and vision
Occupation stage	Moderate	Guided uses and behavioral patterns
Demolition/ Regeneration stage	Moderate	Dependent on planning and materials

3.2Greeningas a Market Opportunity

A majority 83% of the field experts (Fig 5) believe that environmental sustainability is seen as a market opportunity in the real estate sector. This confirms the neoliberal approach of the private real estate sector in making profitable outcomes while addressing the issue of protecting the environment and natural resources.

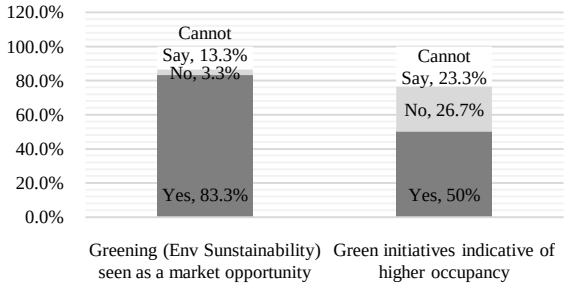

Figure 5: Market perspective of greening decisions

This points towards a spin off in the associated businesses of energy efficient building systems and equipment design, water conserving faucets, sewage treatment technologies and recycled material products etc. The experts believe this spin off as well as marketing propositions of branding their projects as green developments gives a real estate developers an advantage to position their products in the market.

3.3 Key Drivers for Greening Decisions

There are many perceived drivers that positively influence the transition towards higher environmental sustainability goals (Table 2). Performance rating systems that have been developed in India are increasing becoming a popular tool adopted by various developers. If these rating systems are one of the drivers for achieving higher environmental sustainability goals is yet to be established. Green policies have been developed by various states as the land development is a state topic. As the relevant building and layout development permissions are entirely dependent upon the state's prerogative and action, the developers need to adhere to these policies.Rising energy costs are an important consideration from the business perspective of real estate though land remains the biggest cost component in any property development in India. Energy cost are rising especially in the new

commercial buildings that arecentrally air conditioned. The fact these energy costs are mostly born by the end users or occupiers of the building, it is not seen as a compelling need by the developers to address the issue. This is now balanced by the BEE code that aims for the buildings to adopt energy efficiency code, which has already been mandatory in many states and others may soon follow.Lower operational and lifestyle costs may be seen as a driver in adoption of ES though as these savings are not reflected in the developer's schemes, these are not yet perceived as key drivers. Though an indirect relation is seen in case of commercial buildings where, the lower operational costs become a selling point for the developers to charge premium from the end users.

Table 2: Key drivers for greening strategies/decisions

Perceived drivers for greening decisions	**Score for comparative ranking**	**Perception Ranking**
Rising energy costs	10.1	1
Image building for marketability	10.1	1
Green development policies of state government	10	2
Lower operational or lifecycle costs	9.5	3
Customer/End user awareness	9.5	3
Performance rating systems	9.2	4
Greater availability of green technologies and options	9.2	4
Competitive advantage (higher demand for green projects)	9	5
Investor and stakeholder pressure	8.9	6
Environmental and social responsibility	7.9	7

Competitive advantage of promoting and marketing a green development is an important perceived driver. The competition is fierce in the pronouncing the particular project as green and environmentally responsible development. Investor or stakeholder pressure to adopt green practices is seen as one of the key drivers especially in the case of increasing formal real estate funds entering the market in place of the traditional family or individual investors. This is more visible trend in case of large scale projects where the land costs and project costs are higher and the duration of project completion is long.

Customer or end user's awareness is another perceived driver especially in the case of commercial real estate sector, which are now proliferated by information technology companies and related business. Experts believe that the green concept is slowly picking up in the residential sector as well, though is still to reflect strongly. At present the economy, layout, location and pricing etc. remain the major concerns of home buyers in India. Image building for marketability is seen as a key driver. This overlaps with the competitive advantage as discussed earlier, though is different from it in a way that the image building is many times self-driven also.

A few development companies that are a part of larger business houses have taken this path of image building as environmentally responsible development and that reflects in their CSR documents and annual reports. Greater availability of green technologies and options to choose from is making way to faster adoption and implementation of green strategies. The greater penetration of the energy efficiency lighting and electric equipment as well as the sewage treatment and waste recycling technologies and processes available makes it easier to developer to choose to implement these in their projects.

Environmental and social responsibility or CSR initiatives as a mandatory requirement for companies and business houses is also a channel through which the sustainability agenda is being pushed through in some of the developer companies, though experts believe at present CSR activities are more focused on social issues rather that environmental sustainability issues in general.

Key Barriers for Decision in Favor of Greening Strategies

Resistance to Change is seen as one of the barriers where traditional practices, traditional use of material and traditional way of approaching the master planning come in the way of changes at every level to achieve a better quality and higher standard of sustainability parameters. Perceived higher cost and lower benefits are considered as one of the most important barriers in the adoption of environmental sustainability practices. The initial costs as seen at a building level may be 5-8% higher than traditional buildings. Though there are no comparative data available for figures of

infrastructure costs, land development costs and other equipment costs to be included to achieve higher environmental sustainability. With these upfront increased costs and perceived lower or traditional returns in the market for a built-up property, the developers get discouraged to adopt green features. End-users unwillingness to pay higher is perceived as another barrier to adopting ES best practices, which is directly related to the profit margins for the developer.

Table 3: Key barriers for greening decisions

Perceived Barriers to greening decisions	Score for comparative ranking	Perception Ranking
Unwillingness of developer to pay additional costs	11.2	1
Perceived higher costs and lower benefits	10.8	2
End users unwillingness to pay higher	10	3
Lack of fiscal incentives for better environmental perform ance	9.7	4
Lack of Customer/End user awareness	9.5	5
Lack of developer's awareness	9.5	5
Investor and stakeholder pressure	8.7	6
Limited availability of new technological options	8.3	7
Resistance to change	8.2	8
Low demand for greener projects	7.9	9

Limited availability of technological options is considered as a barrier by some experts though it is contradictory to the identified key drivers, where other experts believe that an increase in the availability of technological options is driving the development towards higher sustainability. Lack of fiscal incentives for better environmental performance is considered as a major barrier. At building level this has already been recognized as a key opportunity to improve upon and various state level schemes have come up that are proving incentives for greener buildings. Investor or stakeholder pressure to keep the cost factor in check is also seen as one of the barriers in the real estate industry. The decisions to adopt advance technologies and sustainability practices depends upon the total project cost, its packaging and marketing potential. Other perceived barriers include lack of end-user customer awareness, lack of developer's awareness, unwillingness of developer to pay additional cost and low demand for greener projects.

IV. CONCLUSIONS: INFLUENCE FIELD OF GREENING DECISIONS

The unwillingness of the developer to pay higher costs associated with the adoption of the ES initiatives has been rated as the topmost barrier as this directly conflicts with the business case. The other important barrier is the perceived higher cost and lower benefits of these initiatives. These costs are related to the adoption of newer technologies that have higher capital costs and the benefits are spread over a long time duration and filter down to the occupants rather than reflect any gain for the developer. Experts also see the importance of lack of fiscal incentives in the form of tax concessions etc. for the developer who is ready to go out of the way to adopt and implement ES initiatives. The green strategies/initiatives considered as best practices in terms of achieving environmental sustainability, may be enhanced or improved by policy tools such as imposing taxes and strict legislation for polluters, by providing tax exemptions and additional FSI to developers who are ready to improve environmental performance etc. The performance rating systems and competition to get better ratings, though are considered a positive step but does not come across as very effective way to improve implementation among the experts. End-user pressures, cost savings, concern over increasing energy pricing and enhancing the image of company by being market leaders in sustainability rate higher in expert's opinion as effective tools for implementation of environmental sustainability practices or green strategies in real estate.

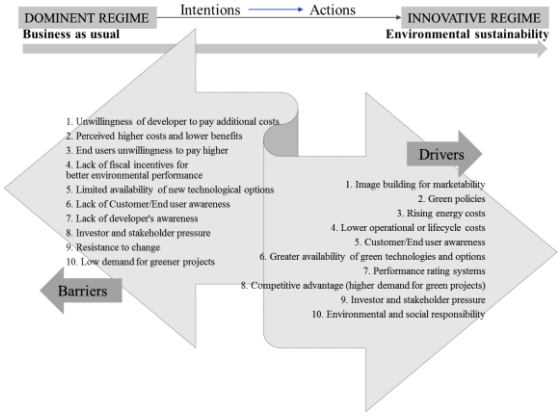

Figure 5: Influence Field for Greening Decisions

Real estate developers and other internal stakeholders have been making greening decisions based on a multitude of factors both internal and external. Many decisions are implemented mainly from the leadership's personal consonance with the greening agenda. Real estate firms must as any other business entities have been pushing their enterprise decision making towards sustainability by way of cost-benefit analysis adjusted with profit making which results in increased efficiency of the resulting development. Greening decision making from a business perspective, as evident from the survey results, is favored by a private developer to address the cost reductions or savings or a growth in revenue, which remains the highest priority of a real estate developer. The second most important aspect in expert's opinion is the image of a company or brand name or reputation in the market. Investor's influence and leader's personal interest remain second most important factors followed by avoiding any regulatory risks involved. The end-users or customer's expectation for a green cleaner product or energy efficient building still remain the least important criteria amongst the ones discussed here. It is also due to the fact that developers feel the end users are still not ready to pay the incremental costs of green developments.

It is clear that the drivers and barriers are many in the form of fiscal tools, legislations and policies, stakeholder pressure, image and marketability of a firm, financial considerations and even perception of the end users. Greening decisions therefore, with the help of these pulling and pushing factors towards the higher goal of environmental sustainability need to be tackled at various levels of policy, planning and project. Many of these factors will eventually be taken care of by voluntary as well as market pressures and few may require legislation changes by the state. Greening or environmental sustainability in a longer run is a broad goal and despite having good intentions to achieve this goal in society or professional community, highly effective tools are required at all levels of project policy and execution for actual implementation,as a mix of legislation, policies, funding instruments, tax exemptions, and actual cost benefits.

V. FURTHER RESEARCH

This study is a part of a larger research goal, which with the help of identified influence factors and their importance in greening decisions aims to propose a decision-making framework for greener developments in India.

REFERENCES

[1] Kennedy, C., &Codoban, N. (2008). Metabolism of Neighborhoods. Journal of Urban Planning and Development, 134(1), 21-31.

[2] Joss, S. Tomozeiu, D. and Cowley, R., Eco-Cities-A Global Survey 2011, International Eco-Cities Initiatives, University of Westminster, 2011 [Online Source: www.westminister.ac.uk/ecocities]

[3] Zhang X L, Shen L Y, and Wu Y Z, Green strategy for gaining competitive advantage in housing development: a China study, Journal of Cleaner Production, vol. 19, no. 2-3, 157-167, 2011.)

[4] Daniel Ibrahim Dabara1, AnkeliIpkeme Anthony, OdewandeAdeleyeGbenga and OluwasegunAdeyanju, Decision Theory and its Relevance to Real Estate Development Decisions, British Journal of Economics, Management & Trade, 4(12): 1861-1869, 2014

[5] Häkkinen T, and Belloni K, Barriers and Drivers for SustainableBuilding, Building Research and Information, vol. 39, no. 3, pp. 239 –255, April 2011.

[6] Yudelson J, Green Building Through Integrated Design, New York , McGraw Hill, 2009, pp. 44-143

[7] Nalewaik, A. and V. Venters,Cost Benefits of Building Green,Cost Engineering, 2009, 51:2, 28–34.

[8] Pearce A R, Sustainable Capital Projects: Leapfrogging the First CostBarrier, Civil Engineering and Environmental System, vol. 25, no. 4,pp, 291 – 300, 2008.

[9] Rodriguez M A, Ricart J E, and Sanchez P, Sustainable Developmentand the Sustainability of Competitive Advantage: A Dynamic andSustainable View of the Firm,Creativity and Information Management,Vol. 11, no. 3, pp. 135 – 146, Sept. 2002.

[10] Bansal Pratima and Roth Kendall, Why Companies Go Green: A Model of Ecological Responsiveness, The Academy of Management Journal Vol. 43, No. 4 (Aug., 2000), pp. 717-736

[11] Benito Javier González, Benito Óscar González, A review of determinant factors of environmental proactivity, Business Strategy and the Environment, Volume 15, Issue 2, pages 87–102, March/April 2006
[12] Bandura A, Social Cognitive Theory: An Agentic Perspective,Annual Renew of Psychology, vol. 52, pp. 1 – 26, Feb. 2001.
[13] Atkinson J W, An Introduction to Motivation,New Jersey: D. VanNostrand Company, 1964.
[14] NurulDiyana, A. and ZainulAbidin, N, Motivation and Expectation of Developers on Green Construction: A Conceptual View, World Academy of Science, Engineering and Technology,International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering Vol:7, No:4, 2013
[15] Robichand, L.B. and V.S. Anantatmula, Greening Project Management Practices for Sustainable Construction,Journal of Management in Engineering, pp: 48-57, 2011
[16] Westley, F., Olsson, P., Folke, C., Homer-Dixon, T., Vredenburg, H., Loorbach, D. Thompson, J., Nilsson, M., Lambin, E., Sendzimir, J., Banerjee, B.,Galaz, V., van der Leeuw S, Tipping Toward Sustainability: Emerging Pathways of Transformation. In AMBIO, Vol. 40, Issue 7. Doi: 10.1007/s13280-011-0186-9, 2011
[17] FrantzeskakiNiki, Rotmans, 2010,Transitions to sustainable development Paradigm, Practice, Propositions & Potential, International Conference on Sustainability Science, Italy, Online source: http://icss2010.net/download/documents/24-JUNE/Sessione-5_Sustainability-science-education/6_N-Frantzeskaki-and-J-Rotmans.pdf
[18] Geels Frank W and Schot Johan, 2007, Typology of socio-technical transition pathways,Research Policy, 399-417, 2007, Online source: http://community.eldis.org/.5ad501d7/Geels%20and%20Schot%20RP%202007%20pathways.pdf
[19] Beach LR, Connolly T, The psychology of decision making: people in organizations, Thousand Oaks: Sage; 2005.