# THE GREEN INDUSTRY AND THE REGIONAL COMPETITIVENESS

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### Abstract

Innovativeness and competitiveness are modern concepts upon which national and regional politics across the world are based. To achieve the global competitiveness of a certain country it is necessary to build regional competitiveness due to a significant role of a region as a basic development unit. Leaders of economic policy on a regional level need to be able to give answers to basic questions of economic policy: "what do we want to produce in our region", "how do we want industrial companies to produce in our region" and "for whom is what to be done". Pronounced regional imbalance of Croatia imposes the need for finding of new generators of economic growth and prosperity. The paper aims to discuss the green industry concept as a possible solution which will favourize regional locations that record the regional problem. Finally, it is discussed what a decentralized approach to industrial policy should be. Key factors required for decentralization should be assessed, such as the main characteristics of the region's manufacturing enterprises, institutional resources and the synergy of economic actors in accordance with the triple-helix principle.

**Keywords:** regional competitiveness, green industry, regional dimension of industrial policy, triple helix, sustainable economic growth

#### Introduction

According to the principles of comparative advantage, the rise of some economies depends on specialization in those activities the economy does the best, or is less bad - this way, the relative success even of the most undeveloped economies of the World is secured. Industrial policy turns into a general policy of economic development, the "borders" of industry limited by classification of activities seem to lose their essence (except for statistical purposes) and thereby push all activities in the economy under the wings of integrated industrial policy. The benefits of industrial progress may be accomplished only if both the existing preindustrial conditions and expected benefits from industrialization are strong enough to overcome the existing obstacles and if they allow liberation of those strengths which are essential for industrial policy (Gershenkron, 1962 in: Cimoli, Dosi, Nelson, Stiglitz, 2009). The main issues are how to survive, which export strategy (since the export strategy is the only thing that can secure long-term sustainable economic growth) and which strategy of national approach to industry should be used. The inability to adapt to new trends is one of the main problems linked to stagnation or regression on a global level. Herein lies an even bigger problem – countries like China and India have marked an increased progress in all industrial structures (from low sophisticated to highly sophisticated products) and little room is left for mid-developed countries (and thereby for accompanying regions) seeking for a breakthrough. UNIDO (2009) stresses the "pressure in the middle" - however the hope lies in the fact that "the pressure" is not unique. Those countries need, as soon as possible, to adapt to new changes in the world economy and have to be successful in competing with as sophisticated products as they can. The opportunity lies in specialization - i.e. different forms of specializations. The new industry of the future has been going through its "reawakening" through reindustrialization, and it will emerge from a sort of "clash" of technological innovations and market opportunities which will, over time, increasingly assume global character (Murtha, Lenway & Hart, 2001; Spar, 2001; Vernon, 1971, 1998, in: Spencer, Murtha and Lenway, 2005).

Industrial development is not the only possible route to a developed country standard of living, but it is a well-proven one. It is for this reason that industrial development remains a high policy priority of governments in the developing world. While less vital to maintaining high incomes in developed countries, industry remains an important source of well-paying jobs, especially for those workers with less than a college education (UNIDO, 2009.). The argument against industrial policy is the result of naïve reading of economic theory and wrong

interpretation of economic history (Stiglitz, 2005). Manufacturing remains an important employer, with around 470 million jobs worldwide in 2009 – or around 16 percent of the world's workforce of 2.9 billion – a figure far higher than many might expect (UNIDO, 2013a). Europe 2020 puts forward three mutually reinforcing priorities: 1) smart growth: developing an economy based on knowledge and innovation, 2) sustainable growth: promoting a more resource efficient, greener and more competitive economy, and 3) inclusive growth: fostering a high-employment economy delivering social and territorial cohesion (COM, 2010). EU could not have been clearer in determining its development priorities. Having in mind that Croatia still does not have a unified, let alone its own serious development strategy which would determine its strategic path and consequently implementation instruments and being aware that all strategies currently in preparation have been harmonized with EU directives, it is not difficult to assume that development strategies of EU are the only development strategies of the Republic of Croatia.

Authors such as Jeremy Rifkin and Nicholas Stern have predicted a new industrial revolution having a strong ecological content which is based on green technology and which is herein referred to as "the green industrial revolution" (GIR) (Verley and Demailly, 2013). Similarly to this postulate, McDonough and Braungart (1998) go for sustainable development, but claim that the existing "eco-efficiency" will not be of great importance in "the next industrial revolution". They deliberately avoid the word "the Third" and here is the reason why: all regulations concerning environment protection may be regarded as signals of failure – they are a burden to industry and trade, and also distract the market. However, their main flaw lies in the fact that they affirm the industrial principles dating back from the First and Second Industrial Revolution. The producers in countries, where there are no harsh regulations regarding sustainable development, actually do have an economic advantage: they can produce bigger quantities at more favourable prices. Rijk and Gulpers (2010) argue that the Third Industrial Revolution, marked by 8 interdependent types of crisis: demographic, ethical, socio-economic, food, water-supply, climate, energy and political crisis, is on its way. They say that the Third industrial revolution stems from industrial enterprises which know how to take advantage of those 8 interdependent types of crisis. Indeed, being aware of the stated problems, they adapt their business models accordingly. In the following decade, those industries shall, either save or destroy the planet due to the so called "consumer explosion". It is indeed a challenging question, whether Croatia can take advantage of this "even newer industry". Wallace (1995, in: Angel and Huber, 1996) noticed in newly industrializing

economies the opportunity to harness industrialization as an agent of greening and possibly of sustainability because such a high proportion of the infrastructure and industrial capital of newly industrializing economies is yet to be built.

## Process of "greening" of industry

According to a McKinsey and Company survey (2007), executives consider climate change to be strategically important and about 60% take it into account in developing new products. Some successful industries are beginning to design for environmental concerns as well as productivity in a far more integrated way than has occurred in the past (Huisingh et al., 1986; Schmidheiny, 1992; Sullivan, 1992; Fischer and Schot, 1993, in: Quinn, Kriebel, Geiser and Moure-Eraso, 1998). Importance of sustainable development concept is identified by numerous researchers (e.g. Burgess & Barbier, 2001; Giddings et al., 2002; Hopwood et al., 2005). Syntagme sustainable development is implying harmonized usage of resources, investing, technical development and institutional development, with emphasis on maintaining equilibrium between usage, savings and regeneration of all resources as well as comprehension that incoming generations are greatly dependent on modern activity (Marošević, Drvenkar, 2012). Sustainable growth means building a resource efficient, sustainable and competitive economy, exploiting Europe's leadership in the race to develop new processes and technologies, including green technologies, accelerating the roll out of smart grids using ICTs, exploiting EU-scale networks, and reinforcing the competitive advantages of our businesses, particularly in manufacturing and within our SMEs, as well through assisting consumers to value resource efficiency (COM, 2010). A few remarks on the real state of the concept of sustainable development in Croatia have been made by Pravdić (2004), who claims that sustainable development is a paradigmatically uncertain basis for steering the economic development accompanied by anticipated progress in environmental protection. Namely, Pravdić (2004) emphasizes that in the last twenty years with the help of natural scientists in the world literature of eco-economy and sociology attention has been drawn to the fact that each developmental activity at the beginning of the 21<sup>st</sup> Century has still required both the consumption of non-renewable natural resources (energy sources, water, space) and has created waste, which is usually not suitable or possible for further usage (recycling). Since the resources are final, the development we nowadays seek cannot be sustainable for a longer period of time.

The term of green industry has not always been easy to define. Perhaps it is best to start with the concept of green economy. The green economy is a new model for economic development, the one aimed at achieving improved human well-being and social equity while simultaneously diminishing environmental risks and reducing ecological scarcities (UNIDO, 2011). Green growth presents an alternative to the conventional economic paradigm of resource exploitation and is built around a concept of growth that integrates concepts such as the sustainable use of natural resources that includes higher energy and resource efficiency and improved natural capital as an impulse of growth. Green industrialization is not only about developing green jobs in some well delimitated sectors. It is about transforming and reinvigorating the whole European industry. True, the future competitiveness for European industry will be built on sustainability (Bennett and Bütikofer, 2013). Because that system is the main obstacle to implementation of green environmental and social policy. The key is to "plant" a diversity of economic tools for various tasks alongside the old oak of orthodoxy and to remove the stifling weeds in the overgrown financial sector. These tools should promote long-term resilience and efficiency over short-term profit maximization, diminishing the role of the outdated economic model without requiring it to be felled overnight. Few industrialists would think of looking to us Greens<sup>1</sup> when it comes to proposals related to financing. However, precisely because we want to advance an industrial transformation, we have confronted this question and have concrete answers on how to spearhead funding for a green economy. With public coffers running on empty, and bank lending frozen, the focus has to be particularly on policies that leverage private financing. This can be done via three main routes: 1) taxation policy (eco-taxation), 2) creation of new markets and steer finance creation of an entire new class of entrepreneurs, and 3) innovative credit models and partnerships (Butikofer, 2014.). Today it's white-collar industry that matters. Why does Germany outperform France? Because Germany has understood that the sale of a product counts less than the service. In Germany they don't ask you if you broke your glasses on purpose, they just replace them without making a fuss. What matters is the overall service. People want products that last and that are reasonably priced. The popularity of car sharing programs is the best proof of this. In the future only around 20% of people – only really hardcore car lovers - will buy their own automobile. Everyone else could care less if the car is built in stainless steel or organic plastic, so long as it works (Boutang, 2014).

<sup>&</sup>lt;sup>1</sup>The Green European Journal is the Journal of the Green European Foundation - European level political foundation affiliated to the Green political family; they are usually called "Greens". See more at homepage: http://www.greeneuropeanjournal.eu/

The greening of industry is a strategic research area where many paradigms converge, not a new field or discipline, nor a specialty of an existing discipline. These paradigms all share the assumption that industrial firms will play a vital role in the needed transition to a sustainable society. And they share the view that the transition will change firms in a profound way, influencing their strategies and instruments, identities, and relationships with their stakeholders (Groenewegen et al., 1995, in: Angel and Huber, 1996). Green industry is thereby the sector-strategy for the realization of green economy and green growth in the industry sector. It is an effective point of entry for and a driving force in the transition to a green economy and ultimately (UNIDO, 2011) and it is particularly relevant for developing and emerging economies which are transitioning their economies and which can either choose to go down the traditional "brown" resource intensive path, or the greener path. Green industry is a rapidly expanding and diverse sector that covers all types of services and technologies that help to reduce negative environmental impacts and resource consumption. Basically it involves a kind of "greening" of industry in a way that all industries continually improve their productivity, effectively use available resources, take care of the environment and are socially responsible. In the institutional sense, green industry may also be seen as the urge of the economy for sustainable growth by undertaking green public investments and implementing public policy initiatives that encourage environmentally responsible private investments (see Figure 1.). In scientific literature one may often come across the term of ecoindustry. OECD and Eurostat (1999, in: ECOTEC, 2002) define eco-industries as activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use.

*Figure 1: Green industry – a two-pronged strategy* 



Source: UNIDO, 2011

Kemp (2014) is asking why should Greens be as militant about changing the economy and the financial system as they are about the environment and social justice? The market for green technologies is booming. The market for renewable energy reached \$260 billion in 2011, twice as much as in 2007. Admittedly, this represents only 15% to 30% of investments in the energy market, and between 0.5% and 2.5% of total investments (Bloomberg, 2012 in: Verley and Demailly, 2013). Authors within the ecological economics movement emphasise that the role of energy in the functioning of the economy is underestimated (see more: Ayres and Warr, 2009). Living standards and energy consumption are closely linked: without energy, there is no food, no mobility, no heating, no industrial processing and no computers (Verley and Demailly, 2013). Firms are clearly the key agents in environmental management and in the greening industry, but sustainability needs to be reformatted to deliver tangible benefits, preferably measured in pound notes for it to find suitable points of entry into businesses (Angel and Huber, 1996). We have shifted from a knowledge-based economy to an economy of knowing; from a full brain to a well crafted one. We no longer sell products. Today we sell processes, procedures and intelligence. The most important thing is learning, transmitting, cooperating, and caring. Each of these somewhat subtle elements is what is key to value and innovation (Boutang, 2014). If those characteristics are taken out of the context of all mentioned theories, it is possible to claim, that the Third Industrial Revolution, whose main postulate is scientific and technological work, is (still) on the horizon. However, which countries shall lead the way, is the question which has yet to be answered in the future (is this

going to be the cradle of the First Industrial Revolution – namely Europe by means of Rifikin's renewable energy source, or newly industrialized countries like India and China by means of Blinder's *offshoring*).

Regional competitiveness - the highway to the innovative region

In current European political debates, regional economic development is a burning issue. Cohesion and competitiveness are the two main goals which have been defined by it. The main goal of European cohesion policy is the reduction of the gap between the poor and wealthy EU regions in order to improve employment and social involvement (Molle, 2007). According to the system of an open and competitive market, their activities should rely on the following: a) enhancing the adaptation of industry to structural changes; b) creation of environment which would support initiatives and development of entrepreneurship throughout the Union, especially small and medium enterprises; c) secure environment which would encourage mutual collaboration of entrepreneurs; d) encourage better usage of industrial potentials, especially in terms of innovative and R&D activities (Pelkmans in: Bianchi, Labory, 2006). Regional competitiveness should be understood as the ability of regional economy to optimize its available resources in order to adjust to circumstances on a national and global market where they would compete in the best possible way (Martin, 2004). Competitiveness has become a natural law of modern economy (Kitson, Martin, Tyler, 2004). Even though economic geographers have been dealing with regional development and factors which influence regional competitiveness for quite a while (Scott, 2001, u: Martin, 2003), they have not tackled concrete analyses of "competitiveness", "comparative advantages" or even "productivity". Hence, economic geographers often rely on associated scientific disciplines. According to Martin (2003), in debates over regional competitiveness we come across three main concepts which are: 1) regions as places of export specialization, 2) regions as sources for income increase, 3) regions as centres of knowledge. In any case, regional competitiveness may be built and supported, but in order for this to happen, developed regional institutional frameworks which would be set apart from national institutional frameworks are needed. According to Wintjes and Hollanders (2005), regional innovativeness, and thereby competitiveness, is determined by the following factors:

Accessibility to knowledge, which depends on the local infrastructure, traffic connections, closeness to important markets, availability of scientific institutions, R&D activities and networks;

Ability of knowledge absorption, which depends on the level of knowledge, education, equipment and professional networks;

Ability to spread the knowledge and technology, which depends on the mobility factor, hightech industry, international exchange and FDI.

Innovation policy based on excellence and location must be mutually compatible. Whereas scientific excellence does not have to be of great importance for each region, location and innovation excellence do. According to Filó (2008), regions are somewhat functional links and integrations of geographically close units and agglomerations, where key infrastructural networks, which establish and by help of which mutual contacts are developed, are set. Those relationships contribute to regional competitiveness. Competitiveness is always a result of an economic equation – it is only a matter of question which direct and indirect factors of the economic policy it is a result of. Countries which have experienced great political and economic changes, like transitional countries, need to create competitive economic policy which would take account of the accomplished level of development and have long-term sustainable development as a goal. This is partly due to possible effects of the "openness" and national processes of deregulation, privatization, and liberalization. Singh and Dhumale (1999) claim that in such countries economic growth should be under the influence of "optimal competitiveness" concept as opposed to "maximum competitiveness" which would promote long-term productivity growth. This is why cooperation between industrial enterprises and all relevant institutions (which has been constantly emphasized in this paper) is necessary. In that way those countries could faster reach a long-term sustainable growth. Sustainable competitive advantage is continuous and unique and hence cannot easily be replicated or imitated. It is a result of detection and implementation of competiveness principles which are unique and differ from their rivals. It is determined by the following factors: sustainability, superiority over the competition, uniqueness, difficulty in replicating, applicability in different situations (Porter, 1990).

The production of knowledge may be regarded as a necessity, but this it is not enough to produce innovations. Nowotny et al. (2001, in: Leydesdorff and Etzkowitz, 2001) claim that this leads to a potential which may be updated through gathering of consumers, producers, entrepreneurs and government in *the transactional sphere* where problems and possibilities are discussed and not traded. Innovation is not a linear, but evolutional, cumulative and *feedback* process which may be accomplished only by means of cooperation and economic and social interactions of various subjects, and which results in technological, organisational and social innovations (Koschatzky, 2005, in: Säll, 2008). Leydesdorff and Meyer (2003)

point towards the three models for studying the knowledge economy based on an innovation system: 1) a model based on knowledge production (Gibbons and associates, 1994, Nowotny and associates 2001); 2) a model of national innovation system in evolutional economies (Freeman, 1988, Lundvall, 1988, 1992, Nelson, 1993); and 3) a triple-helix model of university-industry-government relations (Etzkowitz and Leydesdorff, 2000). Those three models analytically differ from each other in the way integration into system is made and in the way differentiated components of that system are set. According to Etzkowitz (2003), triple-helix model represents a process where university - business sector - government areas merge with the aim of increasing gains which are bigger than national, regional and multinational systems. This is a new model for enhancing cooperation between the business sector, university links and government agencies having the emphasis on commercialization (Asheim & Coenen, 2004; Leydesdorff, 2005; Leydesdorff & Etzkowitz, 2001; Shapira, 2002). Indeed, this type of cooperation creates balance between knowledge, social gain and profit motivation (Asheim & Coenan, 2004; Leydesdorff, 2005). In triple-helix model internal entrepreneurial reorganisation of each individual key factor (scientific sector, business sector and state), as well as mutual influence of each key factor on creation of new level of trilateral networks for producing new ideas and forms of high-tech and high-touch development, is needed. An efficient system of knowledge transfer could be achieved by linking and cooperation between public and educational sector, and entrepreneurship based on knowledge by linking of educational and private sector. Triple-helix offers the best solution for a longterm cooperation which allows short-term intensive experience (see Table 1.) (Campbell, 2005; Etzkowitz, 2003). The critics of the triple-helix model (Jensen and Trägårdh, 2004 in: Säll, 2008) argue that this concept is rhetorically strong, but difficult to implement since it is a very vague term. They add that cooperation is a tem which is easier said than implemented; local government deals with local issues and national government is focused on national priorities as if they were the most important issues, even when the same political party is in power both on a national and regional level. Despite some critics, triple-helix stands out as the model which does not have a better alternative in terms of the key factors of regional competitiveness.

Relationship category	Type of relationship between the subjects	Definition
Coordination	Mutual involvement	Development strategy which takes mutual influence into account
	Dialogue	Exchange of information;
	Associated planning	Temporary associated planning or associated acting;
Integration	Associated acting	Temporary collaboration;
	Joint venture	Long-term associated planning and acting on key projects according to the mission of at least one participant;
	Satellites	Special subject, joint in ownership and created to serve as integrative mechanism;
Increase in closeness		
and mutual involvement (but not	Strategic alliances	Long-term associated planning and acting based on
necessarily bigger		key goals of the mission of at
efficiency or		least one subject;
collective action)		

Table 1: Taxonomy of different types of relationships

Source: adapted according to: Perry, 2004, in: Säll, 2008

Ecological modernization is traditionally viewed at the scale of the nation; however, there is a body of literature and practice that links the concept with regional development (Janicke, 2008; Brand and de Bruijin, 1999 in: Potts, 2010). This is a logical proposition. With regional planning, recording to Potts (2010) on the policy agenda and the sustainability literature advocating a regional approach as an appropriate scale for integration of economic and

environmental concerns (see *Figure 2*.), the region should be considered an appropriate scale for linking ecological and socio-economic processes.



Figure 2: The conceptual natural advantage model

Etzkowitz makes distinction between "well-fed" and "skinny" regions, depending on the structures which support innovativeness. Each region may become the "learning region" depending on the innovative environment. If the regional government "fails", the university may assume the role in creation of investment and innovative environment in the region, which then creates regional dimension of industrial policy. In territorial concepts like clusters, innovative milieus and regional innovative systems, regional innovative differences are no longer the result of location parameters, but depend on the ability of economic operators to establish intra and inter regional information and production networks on a regional level in order to participate in network integration and make profit from those networks by means of the collective learning processes (Koschatzky, 2005, in: Säll, 2008).

## Regional dimension of industrial policy

Industrial policy had to shift from industrial policy centred on the state level, to top-down and production-specific industrial policy. The new approach is stimulated by the reindustrialization of traditional industry as well as new forms of regional revival based on

Source: Potts, 2010

high-tech industry. Therefore, the new industry needs to be bottom-up and "associationalist" (Sepulveda and Amin, 2006). The new industrial policy is based on the strength of local agglomerations and cooperation of enterprises in raising competitiveness on the local level. There are many ways to approach industrial policy on a national, regional and local level, like industrial counties (Bagnasco, 1998, Becattini, 1979, Bianchi and Giordani, 1993, Brusco, 1982, 1989, Pyke et al., 1990), flexible specializations (Piore and Sabel, 1984), milieux innovateurs (Camagni, 1991, 2002, Garofoli, 2002), new industrial spaces (Scott, 1988, 1998) and learning regions (Braczyk et al., 1998, Cooke and Morgan, 1998, Florida, 1995, Maskell et al., 1998, Morgan, 1997 in: Sepulveda and Amin, 2006). The question is how decentralized approach to industrial policy should look like? The key factors should be assessed very carefully in terms of the number and types of enterprises, technological capacities, institutional resources and synergy between the economic subjects. The assessment of those factors needs to be done before the necessary policy has been determined. Likewise, it is important to determine complementary and conflicting goals of the regional dimension of industrial policy, because they can, most certainly, make implementation of regional and national economic policy easier or harder. Industrial policy with a regional dimension does not undermine the intervention of the regional government. In case that the regional government plays a key role in defining and implementing of regional industrial policy, other institutions may likewise significantly contribute through national policies and international interventions. Regional industrial policy may be defined as the application of general principles of industrial policy in organising of industry on the level of specific locations (Bellandi and Di Tommaso, 2006). Regional dimension of industrial policy has also a strategic dimension in that it respects local specificities. This way, specific industrial sectors are supported in order to solve specific local economic problems. Two key areas should be distinguished during the research of the regional dimension of industrial policy (Becattini, 1989, Brusco, 1986, Russo, 1996, in: Bellandi and Di Tommaso, 2006): 1) industry with its organisational and territorial characteristics (generic industries, generic clusters and local production systems) and 2) location with its social and economic characteristics and evolutionary processes (state territory, location, industrial location). The research of Imbs and Wacziarg made in 2003 (O'Connor and Kjöllerström, 2008) shows that the more economy progresses, the less concentrated and more differentiated it becomes. Economic growth and production capacities may be secured by encouraging of internal processing activities and products as an integrated part of the entire economic development - meaning, by differentiation of activities and products. It is possible that bad economic policy may disrupt

the starting position of industry, but can good economic policy play a key role if the country has specialized in primary products and not industrial ones? The answer certainly lies in the combination of good economic policy and other numerous factors. China and India have succeeded not only and exclusively due to cheap workforce and by competing using that factor, but also due to their possibility to quickly differentiate into more sophisticated, technically-demanded activities which enable higher economic growth rates. A specific industrial "upgrading" is the key and leading indicator of economic progress. Industrial restructuring may be understood twofold. Firstly, it may point towards sectoral changes in outputs and secondly, industrial restructuring may appear within the industry itself in that enterprises modernize, gain new technologies, change production processes, increase the volume of output and increase the product quality (Huss, 1992, in: Machado, 1995). Industrial production, which is the basis of modern civilization, does not have limits and today only those countries which have developed processing industry are developed. Jurčić (2011) states that although the service sector today makes over 50% GDP in most of the countries, it needs to be emphasized that most of those services are directly or indirectly linked to the industry. Industrial progress enables accelerated growth of national wealth and therefore stimulation, support and promoting of *new* industry is necessary because it makes the source of national strength (Supple, in Cipolla, 1980, p. 285 in: Bianchi and Labory, 2006).

#### Concluding remarks

Modern regional policy adds strategic importance to industrial restructuring, finding of own strengths in the form of smart specializations and other structural adjustments in regions, especially those which are lagging behind. Regional policy needs to be market-oriented and should respond to the globalization process with: 1) focusing on learning, 2) concentration of efforts on supporting enterprises in order to overcome the cognitive distance from the valuable knowledge base which is out of their current reach and 3) supporting accumulation and protection of social capital which is crucial for collaboration and exchange of partly hidden knowledge among enterprises. Innovations are no longer a function of a single institutional sphere like industry. Innovations in the *innovation system* may result from the processes of *dissensus* and *consensus*. As indicated by Machado (1995), regional restructuring could be seen twofold: 1) as a change of distribution of economic activities within a region and 2) as a change of economic conditions of the region itself. Fratesi (2007) claimed that due to the characteristic of knowledge cumulativeness, the same level of innovation investments is not a sufficient prerequisite for realizing the more homogeneous level of regional income per

capita. Accelerated spreading of existing knowledge may significantly reduce regional development discrepancies. Besides that, Fratesi (2007) suggests that if a certain country, whose regions are marked by diverse existing level of technological production complexity, applies equal innovation policy for all regions, the result could instead of reduction be further increase in regional discrepancies. In the light of the above said, it could be concluded that implementation of the same innovation policy and neglecting of specific regional needs may strengthen the process of region diversification. Some empirical papers have determined the existence of the spillover effect of research and development on a national and international level. However, the absorption potential of a region is of vital importance in accepting external knowledge embodied in FDI, which may have a positive effect on regional development (Kuo, Jang, 2008). Knowledge spillover effect does not only work on enterprise and activity-level, but also on regional level (Audretsch, Lehman, 2005). Many sectors on a regional level are mostly traditional (agriculture, food industry, transport and alike) and therefore specialization among sectors, application of new technological solutions into the existing sectors and specialization in specific sectors, the so called *smart specializations* are needed.

The hope lies in a long-anticipated industrial strategy. It is necessary and probably already "a bit late" to do a thorough analysis of the existing state and thereon create a long-term development strategy of reindustrialization based on consensus of all relevant participants and bearer of development. The analysis has to determine which industries have passed their best, which can survive even without realizing huge profits and which industries can bear the development; then, it has to define the eligible industrial structure according to value added and industries which have the comparative advantages and which would, in stimulating conditions, transform into competitive ones, to incite regional government units to education and life-long learning for the needs of economy, to make public sector "a service-providing sector for economy" according to the principle "development comes first", to do the training of the public sector for attracting FDI, to create regional management according to the principles of entrepreneurial management and to develop regional projects based on systematic analysis of international market demand all in cooperation according to the triplehelix principle. The answer to the question of possibilities and limits of green industry in the Republic of Croatia is linked with obligations which the Republic of Croatia assumed with signing and ratification of the Kyoto Protocol and obligations it assumed by becoming a member of the European Union. Unfortunately, or perhaps luckily, the membership in the European Union itself, gives us good (and only) long-term guidelines regardless of the fragmentation of legal regulations and the almost non-existent industrial strategy – or frankly speaking, rather delayed adoption of the strategy, and lack of clear waste management strategy, clear strategy of water, forest and other natural richness management and purification, clear energy strategy and the will to change (e.g. Europe 2020 and Horizon 2020). Assumed obligations imply also those of financial nature. In case of their nonfulfilment high penalties could be expected and with the deficit of the government budget, additional state borrowing is inevitable. Frequent passivity of the media, but also of competent institutions, is making adaptations harder, since systematic education of the wider public on positive world practices and understanding of the importance of energy efficiency, reduction of energy dependence and efficient waste management is not practiced. Almost free natural renewable energy sources may be a part of smart regional specialization which will enable reindustrialisation to the benefit of all. The goal is to create a closed circle in industry, create pure and green industries which will make additional values, provide employment, spread the influence on other sectors and contribute to long-term sustainable development so isn't that indeed "a greening of industries" in its full meaning?

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