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Volume 1 Number 1 **March 2019**

CONTENTS

FOREWORD to INSIGHTS INTO REGIONAL DEVELOPMENT, 2019 Volume 1 Number 1 (March)

Dear readers,

Over the last years, the world has undergone major geopolitical, economic and social changes. It is our duty and obligation to carefully analyse and reflect upon them, for the purpose of obtaining and advancing a better awareness on the current, often troublesome state of world affairs.

Worldwide, visible and invisible borders (far more complex than administrative boundaries) are leading us toward different and compound realities, which often go unexplored, whilst uninterruptedly changing form, substance and meaning. In the face of this, we intend to investigate, not only the dynamics between states, but also the interactions within states and regions. In today's universal era of connectivity, once upon being unavoidably driven towards new, unedited research paths, we may feel a bit like the explorers of the 15th century. We feel the urge to explore as much as the emotion caused by the emergence of the unknown. Our journal is our ship and, in the hope it is sea-worthy, we will board it to sail towards a "new world", by analysing differences and complexities in order to become a good reference point for researchers and political stakeholders. I would like to thank the *Entrepreneurship and Sustainability Centre* for its support and my colleagues who joined me in this new adventure as members of the scientific board of this journal. I wish to all of them all the best and to all of us good luck with this new project.

With best regards,

Professor Salvatore MONNI
Editor-in-Chief
of INSIGHTS INTO REGIONAL DEVELOPMENT

Head of international consortium implementing a project financed by European Union's Horizon 2020 research and innovation programme ES H2020-MSCA-RISE-2014 CLUSDEVMED (2015-2019) Grant Agreement Number 645730730

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TERRITORIALIZED FORMS OF PRODUCTION IN MOROCCO: PROVISIONAL ASSESSMENT FOR AN OWN MODEL IN GESTATION*

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Abstract. With the current movement of "glocalization" imposed by openness to the global sphere and the necessary anchoring to the local, the productive systems - from here and elsewhere - can no longer be non-territorial or autarkic. As much openness opens up the prospect of competitiveness, as much the local territory ensures a kind of "rescue net" and refuge in the event of global crises that have become frequent. Whether it is the social movement paradigm or the local production system canvas "glocalization" is justified by the wealth potential that territories of any nation seeking its competitiveness on the international scene conceal. To identify, grasp, understand and value such a territorial resource, the diagnosis of the existing is necessary. Socio-spatial disparities are at the heart of the problems of regional development confronted with the double malaise of poverty and environmental degradation. With the certainty that wealth is created within companies and that they are the key players in territorial development, the analysis of the spatial anatomy of productive systems provides information on the symbiosis between the productive and the spatial. Without claiming to reproduce the evolution of productive systems and their spatial expressions in its completeness, this paper proposes to explore the major territorialized forms that the

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productive system in Morocco has taken from independence to our day. It's all about finding to characterize the specificities of Morocco in this matter by launching a sort of a provisional assessment. The main question here is to approach a kind of model in gestation that Morocco can create for the rest of Africa at this spatial / productive level.

Keywords: Productive system; territorialized forms of production; glocalization; integrated industrial platform; clusters; LPS

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1. Introduction

The various territories composing the nations present a real unavoidable resource for states wishing to better position themselves in global competition, especially in an international context where industry and space interlock. Western researchers (Monni et al., 2017; Mikhaylov 2018; Kiselitsa et al., 2018; Mayorova et al. 2018) have early become aware of this "niche" for already more than half a century. However, in the south - including Morocco - this territory's rediscovery, dates back only less than twenty years. Indeed, a careful analysis of the spatial expressions of the productive process in Morocco coincides with the famous analysis on LPS and territorial competitiveness in 2002, recommended by the Territorial Planning Direction. Workshop where the first premises were already prepared with the regionalization of 1997 and the national debate on regional planning. With the offshoring sphere and the new industrialization orientations, the spatial variant becomes vital in the race for the attractiveness of domestic and foreign investments via cities, regions and localities territorial marketing maps.

The economic changing that Morocco is experiencing makes it an open worksite at all levels. The spatio-temporal organization of the productive system, passed from the Industrial Districts to the Integrated Industrial Platforms "P2I". Such are the case of Casa Nearshore, Rabat Technopolis, Agropolis of Meknes, Fes - Technovalley, Tanger Free Zone ... This trend is prolonged by the Industrial Acceleration Program (IAP) and the "clusters" as expressions of a spatial anatomy attesting of the new dynamism experienced by this cosmopolitan country.

Given this dynamic, this paper proposes to interrogate these P2I as territorial expressions of the productive organization by putting them under the analysis and investigation spotlight to be able to compare them with other forms called clusters, LPS or others. Two axes will articulate our communication. The first one is devoted to the presentation of the new Emergence program and the National Pact of the Industrial Emergence (NPIE) by asking ourselves if this last one constitutes the continuity or the rupture of the first one. The second deals with their spatial and territorial anatomy while at the same time exploring whether there is an overall coherence leading to a thoughtful development of our economy open to different actors of the international economy.

2. Emergence plan (EP) - National Pact of the Industrial Emergence (NPIE) - Industrial Acceleration Plan (IAP): continuity or rupture?

The challenge facing Morocco's openness is to increase the competitiveness of its economy, transform potential risks into odds and opportunities, and finally to erect, the country into regional investment-production-exchanges platforms, attractive and efficient at the crossroads of Europe, and the space Maghrebian/African and Mediterranean. The action plans : EP (2005), NPIE (2009), and Industrial Acceleration (2014) enroll in this spirit.

1.1- The main features of the Emergence Plan

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(1)

Morocco in the 1990s had just emerged from a long and painful Structural Adjustment Program (SAP), but it let appear new ambitions: reclaiming markets, economic take-off, competitive industry. Under these conditions, the World Bank recommends setting up a development monitoring committee, whose mission is to define a strategy that will endow Morocco with a modern and competitive industry. The committee has developed a strategy called " Competitive Morocco", built around clusters, sectors supposed to play the role of locomotive to pull growth up. It was necessary to create wealth and ensure source of foreign currency; hence the slogan of "Emergence". The EP focuses on two axes: to create wealth, employment and growth and to develop export activities with high added value.

However, a number of handicaps have been identified by McKinsey: the importance of the informal sector, the weakness of domestic demand, the economy's reliance on a widely under-capitalized scattered industry, heaviness of administrative procedures, taxation and business regulation...

These pitfalls are more pressing in so-called second rank regions. The upgrading of the Moroccan company then intervenes as a means to face the opening both as necessity, opportunity and challenge.
The PE was strategic and relied on the proactive but non-exclusive targeting on engines of growth and competitive modernization of the existing fabric. Indeed, this program was a voluntarist policy to focus on the export-oriented growth engines or what are called the World Trades of Morocco (WTM) (2), mainly:

- ✓ Offshoring or relocation of services;
- ✓ automobile
- ✓ Electronics
- ✓ Aeronautics
- ✓ Food industry
- ✓ processing of seafood
- ✓ Textile-Clothing Sector

All these projects and the expected spinoffs were - according to PE logic - tributary of a kind of competitive modernization of the already existing economic fabric. This is the second pillar of the emerging strategy.
It presents a road map of growth likely to restore the visibility, trust and mobilization. The aim is to provide Morocco with an Economic Recovery Program to make it an investment, production and export platform. A big question remains, however: Have we really prepared the transition to a modernized and creative economy?

1.2- The NPIE, complementary contributions and novelties

From 2005 to 2009, telecoms exploded, infrastructure improved. Many companies have moved to Morocco mainly in sectors with a strong technological component such as aeronautics, electronic components, teleservices, what leads us to interrogation ourselves about the contributions of the NPIE in the light of the EP.

NPIE refers to the Public-Private Program-Contract 2009-2015, relating to the National Pact for Industrial Emergence and Investment in Morocco.

The NPIE had 111 measures of which 48 relate to the competitiveness of enterprises. The targeted objectives / impacts were to give greater visibility to economic actors in a "disturbed international situation"; to reduce urban unemployment rates and the trade deficit; to increase industrial GDP; to support national and foreign industrial investment and to contribute to regional planning policy.

For the business climate, the plan stipulates that the targeted actions corresponding to the investors needs are: the "greater use of mediation and arbitration for conflict management, harmonization and continuous improvement of the tools of welcome investors including the Regional investment centers (RIC) and the Moroccan Agency for

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2019 Volume 1 Number 1 (March)
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Investment Development and the establishment of complete one-stop shops within the Integrated Industrial Platforms (P2I). The objective is to improve Morocco's position in international rankings (Doing Business ...) ".
Indeed, Morocco revives - somehow with his dreams. The economy is more or less healthy, less dependent on agriculture and services have exploded. But growth remains shy. The rate of growth is insufficient for an economic take-off, especially for a country whose unemployment rate still exceeds 9%. There was also an aggravating factor, that of exports in breakdown, not diversified enough, nor high added value products. The trade deficit is digging dangerously especially for goods trade and the deterioration of MRAs' (Moroccans' Reside Abroad) income ... The 2008 crisis has aggravated the situation.

It should be emphasized here that the emergence sphere has caused a kind of snapshot of our economy with its advantages in terms of market access, EU logistical proximity, quality of life and moderately skilled workforce. Alas, on the other side, there is a set of pitfalls aggravated by the free trade agreements, the proven productivity gap, the cost of energy, the administration quality, the narrowness of the internal market, business regulation and taxation.

1.3- Industrial Acceleration Plan (IAP)

Launched in 2014, this plan recognizes the contribution of the two previous ones and seeks to "consolidate the achievements". Mainly those relating to "the 22% increase in exports of the sector, a clear evolution of infrastructure and the implementation of global industry leaders, increasing FDI up to an annual average rate of 23% since 2009". The same source considers that these performances "allowed to better position Morocco as a credible and competitive industrial destination". Without commenting on these statements, we wonder how the IAP will fulfill these ambitions?

The declared objectives don’t go beyond the emergence framework: increasing the industry's share of GDP, boost export capacity both quantitatively and qualitatively, improve the reception capacities of investors and to increase productivity by targeted support to the industrial fabric. The components explicitly declared concern: industrial ecosystems for a more integrated industry, support tools adapted to the industrial fabric, a stronger international positioning and a steering and governance of the strategy.

In reviewing the above plans and strategies, we highlight the importance of the declared reforms and the diversity of the underlying restructuring measures. However, declared voluntarism must not obscure a still worrying reality.

We retain, indeed, the three main conclusions:

- The industrial base is very fragile because of its high level of fragmentation and the impact's relativity of the upgrade;
- Distinctive comparative factors and advantages are few and misused;
- Sector trends remain favorable despite the rise of Asia; but on condition of implementing a targeted and proactive approach.

The objectives of the emergence sphere - first and second version - remain far from being achieved. But what about the spatial and territorial expression of the productive system in Morocco especially with the new regionalization project in gestation?

3. Spatial and territorial expression of the industrial movement

Morocco has not lived through pure and hard Taylorophordism, but at the level of productive structures, the crisis of the so-called Taylorophordism appears like that of the great dimension and the process of spatial concentration

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of production. Such a situation leads to new development models, towards new so-called post-Ford productive systems and begets important effects on the mode of spatialization of productive systems.

Also, the occurred restructurings at the productive structures level bring about a real territories dynamic. To report for this, and after focusing on the evolution of productive structures, we will concentrate on the territories dynamics that the evolution of Morocco's productive system (s) generates. From industrial zones to clusters and innovation ecosystem via integrated industrial platforms.

3.1- Industrial zones before the "emergence era", willingness to support local economic development and to influence regional imbalances

Given the role of industry and the weight of spatial and productive restructuring both at national and international level, Morocco is supposed to be interested, since its independence and even before, in the importance of infrastructures for hosting productive activities. Indeed, their implementation is a major concern in the process of strengthening the global economic environment and bases of its viability. The first planned organization forms of these spaces refer to the "industrial zone" notion whose national program of industrial zones (NPIZ) claims to be the expression in Morocco.

The NPIZ initiated already since 1951 will be set up in 1980, and this to establish a better distributed industrial development and thereby fight against the glaring spatial disparities. The NPIZ concerned a set of sites across the different regions of the country with a budget of 950 million DH for the development of 1300 ha. In the early 1990s, this area was expanded to 2000 ha. Thus, from 25 industrial zones in 1980, the NPIZ covered 80 zones at the end of 2001 to reached about 120 in 2004.

The NPIZ's enlargement depend for many of the economic role’s development of the local authorities, for whom these areas constitute essential sources of tax revenue. By diagnosing closer this program, it appears that the regional disparities against which it has been originally conceived are only getting worse and that almost all Moroccan industrial zones suffer from several handicaps, mainly:

- lack of a real strategic vision in industrial and / or territorial planning;
- concrete lack of capabilities in industrial planning and management among the main developers;
- lack of financial means resulting from the austerity required under the SAP which coincided with the start of the NPIZ;
- the fact that local governments view ZIs only as sources of tax revenue. There was a lack of appropriate management structures for industrial space from these communities ...

In fact, the industrial zone was most often apprehended according to the legal and land problems that it arouses, its impact on location ratios and the effects it has on the functioning of the urban organism. However, it is no longer a space reserved for a specific activity or a simple urban planning technique but, more of a privileged instrument of economic and spatial strategies.

The industrial zone is then conceived as an essential support for the application of space and sectoral policies carried out by the public authorities. Each actor sees in it, a particular aspect. Indeed, for the company, the industrial zone presents the possibility of benefiting as much as possible from the allocation of public aids, in particular land costs and suppliers. For SMEs, the industrial zone essentially makes it possible to minimize implementation costs, to benefit from the presence of certain services and possibly to find outlets through specialized subcontracting activities. For the planning organism, the industrial zone appears primarily as an instrument of spatial coherence. At the local community's level, the industrial zone is both an instrument of urban planning and a mechanism of social and economic development. It constitutes a way of rationalizing urban land

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(1)

use, controlling land speculation and protecting the environment. It is also the hope of attracting businesses for job creation and securing new financial resources.

The IZs question arises for two concerns: first; the industrial decentralization able to energize the economic fabric at the different regions' level, then, the urban space's organization and the development of the city itself. In both cases, there is a need to optimize the state's infrastructure investments for "social and spatial equity".

At the institutional level, the implementation of the above-mentioned program had needed the establishment of a steering and assistance committee chaired by the Prime Minister and a committee for monitoring the execution bringing together the ministries of the interior, of trade and industry, and of housing ... This institutional framework called a number of actors / developers who can be public, semi-public or private.
What were then the objectives of the NPIZ and who are the actors?

3.1.1- The NPIZ's objectives

With the socio-spatial disparities of the 80s and especially the heaviness inherited from the past, the preparation of an integrated space/platform delivering a "diversified panel of infrastructures for the implementation of industrial projects" was of primary necessity. It had the following objectives:

- reduce the dependency links between the areas of the same city and of the region vis-à-vis other regions;
- improve the standard of population's living by keeping them in their locality and through distributed income;
- use the potential of the region by valuing them on the spot;
- alleviate the crucial problem of unemployment and underemployment of which some cities suffer;
- provide companies with technical assistance tailored to their needs and offer them support services for the projects' implementation;
- provide units with modular structures adapted to the activities;

Thus, the NPIZ aims in principle at an economic and spatial strategic planning. This program aspires to provide space support to certain units, that allow them to be quickly operational.

It is confirmed there that; the industrial zone is a privileged tool for boosting the economic tissue fabric of the city and its region. The objectives presented above are not definitive and quantified. Indeed, they must be scalable and take into consideration the general economic context restructuration. Achieving these planning, urbanism and economic, social and spatial development goals, identifies broad and different areas of intervention. This involves a variety of stakeholders which can be private, public or semi-public.

3.1.2. Institutional framework of IZs and the diversity of their actors

The complexity of the assigned missions to the industrial zones and the diversity of the mobilized actors to ensure the implementation of the targeted objectives, led the managers to develop an institutional framework capable of guaranteeing the execution and monitoring of the program. The management and administration bodies installed are multiple :

- the Orientation and Assistance Committee;
- the Accreditation Commission for Industrial Zones;
- the local attribution Commission.
- the Monitoring Committee responsible for the execution of the program.

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2019 Volume 1 Number 1 (March)
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From this institutional framework, we deduce that the development of industrial zones brings together a set of social actors, each called to fulfill a specific function in the planning process. The State, the local authorities, the landowners, the planning agent, the financing organizations, the industrialists ... represent the actors who intervene in the matter of development of the industrial zones. However, their logic can sometimes be of contradictory logical, which makes the management process particularly complex.

These different actors are linked with several connections that are intensifying during a development operation of a IZ. However, the central role always comes back to the planner, who occupies a privileged place as the interlocutor vis-à-vis the other actors.

Whether it is institutional, public, private, or semi-public structure, the developer is responsible for:

- the acquisition of land and the registration;
- the subdivision of the area according to a specific parcel plan;
- the equipment of the zone;
- the allocation of subdivisions to beneficiaries;
- the management or support to the management structures of the area.

A review of industrial zones shows that:

- their planning and development is still the prerogative of the public,
- they consist in making available to the industrials, land already developed in infrastructure and other basic equipment at preferential prices,
- the spatial dynamic is far from being dictated directly by that of capital.
- the space and territory dynamics, governed elsewhere by the organization and logic of productive systems' restructurings, remains in Morocco a work of the State even with the emergence's sphere.

3.2- P2Is, Clusters and Industrial Ecosystems, Beyond Spatial Expression

Before talking about P2I, we focus on the notion of industrial parks and their relationship with the process of regionalization, integration and territorialization of the producing and investing act.

3.2.1 - Industrial parks / tool of the region-vector of SME / FMN synergies

The current globalization is in the process making regionalization, which is "an institutional form of reorganization of the relations between the Government and the territory", an engine of national and international dynamics.

Thus, because of its median position, the economic region is at the heart of a plurality of logics and at the crossroads of several dynamics linking the local to the regional, the two to the national and all three to the international level.

The region such as claimed now in Morocco is no longer just this space consolidating decentralization and deconcentration and giving signs of the completion of "modern state" construction. It is mainly a region allowing a rational territorialization of productive systems and a local / international synergy. it became cleaur that, the creation of an economic region in Morocco is uplifting because also induced by "the structural requirements related to the positive articulation between the consolidation of the national economic space and the development of interregional and continental economic spaces".

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(1)

Having adhered to the "global village" where borders tend to be abolished, Morocco is forced to prepare a reception structures for foreign and domestic investments capable of launching international networks.

Among actions taken in this direction, and next to the promotion of development's poles, of industrial zones and the promulgation of investment codes, an industrial development policy of the territory imposed itself. Indeed, the region, center of economic decision, also passes by the development of an integrated, diversified, decentralized regional productive system and open to the outside. It is in this sense that "the industrial parks, considered in the new context of globalization and liberalization, are presented as an important vector for the revitalization of the industrial sector and its bases of competitiveness on a global scale".

The World Bank, in its efforts to support and guide the Moroccan economy makes industrial parks and free zones a new framework suitable to the promotion of the national private sector and the reception of FDI. Industrial parks are a new formula for the industrial systems spatial organization, that allow fruitful management for the Government, developers and investors.

The principle is that the developer rent land from the government to sublease them to private companies after development. The Government undertakes to carry out all the off-site infrastructures, provided that the developer commits himself first to mobilize the private funds for the realization of the infrastructures within the site and to assure the management and the services to the companies.

The developer must then act as an intermediary between Moroccan companies and local and national authorities in various fields.

Given its importance, a first phase of the Private Industrial Parks Program, developed and managed by organizations with internationally recognized experience in the field, was launched in 1997. Thus conceived, and linking multinational contractors to subcontractors or local partners, the industrial parks, well organized and managed, will constitute development poles, and headlights for a successful opening on the global production system.

This is an arduous task that can only be successful with the support of the State, especially the regions through programs capable of reviving regional development and thereby promoting a national economic takeoff. The target regions are those capable of creating synergies at the productive and territorial levels.
That is why we affirmed that the issue of economic regionalization and regional planning is at the crossroads of several paths.

Thus, a region capable of overcoming the globalization and facing its challenges would be able to:

- contribute to build an economic, social, spatial and territorial democracy;
- achieve a rational and intelligent opening on the regional, supra-national and global productive systems in progress of shaping;
- create and maintain a harmony between the rural and the urban;
- succeed in creating and maintaining a synergy between SMEs / SMIs (which can become regional development actors and not only passive subcontractors) and multinational firms whose powers tend to outweigh those of the States.

Morocco of this 21st century needs an "economic region" capable of mobilizing local and regional resources and integrating them for a better insertion of the country into the world economy while preserving the competitiveness of the national economy. Will he succeed this work with the P2I?

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(1)

3.2.2 – The P2I, Clusters Ecosystems: extension or redesign?

If under the aegis of the emergence's plan and the NPIE, the P2Is were evoked, with the IAP we will introduce the notions / forms of "clusters" and industrial ecosystem.

The P2Is can be identified to the new forms of industrial and productive organization spatialization in Morocco such as technology parks, clusters and LPS. The P2I program includes 3 types of platforms:

- The generalist P2Is: open to all sectors, and can combine several sectoral neighborhoods;
- The sectorial P2Is: dedicated to a specific sector. However, they may include neighborhoods reserved for sectors close to the main sector (eg the Electronics district embedded in a P2I Automobile);
- The P2Is "regional / national Areas": generalist zones reserved for actors of an industrial fabric coming from the same region of a foreign country.

The selection of the final sites of P2Is implementation is based on the presence of an employment's pool ensuring an available workforce meeting the needs of industrialists, logistics accessibility ensuring a good connection of the site for its supply and production's export and in terms of the presence of a mobilizable land reserve.

Officially, the value offered by P2Is to investors can take six complementary forms:

- real estate offer (rental or purchase of land or buildings),
- offers of various services (infrastructure maintenance, security, telecommunications, catering, health services, banking, business center, recruitment support, travel agency,
- training offer (specialized training institute or OFPPT),
- logistics offer,
- one-stop shop, logistical connectivity to the city and
- status of free zones (for the P2I of Kenitra, Nouaceur, Tangier and Oujda).

Clusters: These are public / private mixed governance structures comprising several actors: Government, large companies, SMEs, education and research operators and, of course, aid and financing organizations with the ultimate aim to bring out innovative projects. In 2014, thirteen-component implemented in various regions and operating in a variety of sectors, grouped themselves in "Morocco Cluster", it comes to:

- Morocco Numeric Cluster in ICT;
- Electronic, Mechatronics and Mechanics Cluster of Morocco – in Electronics and Mechatronics,
- Oceanopole Cluster of Tan-Tan for the valuation of seafood products
- Agadir Cluster Haliopolis for the valuation of seafood products;
- Menara Cluster of Marrakech for Luxury products in the food and cosmetics industry;
- Textile cluster for technical use in Technical textile;
- Cluster denin & casual wear in Jeans fabrics;
- Building materials and energy efficiency in Settat;
- Solar cluster in Solar technologies sector;
- The environment and sustainable development in Casablanca;
- Biotechnology and agro-industry in Meknes;
- The Smart City, (Smart City Cluster in Casablanca);
- The Smart City and the green economy in Oujda.

This list has been extended to new projects installed after this period such as Tangier tech.

Industrial ecosystems: This is a new designation of territorialized forms of industrial production that "aims to reduce sectoral fragmentation by fostering strategic, targeted, and mutually beneficial partnerships between industry leaders and SMEs (Very Small, Small and Medium Enterprises)". These ecosystems are called upon to

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(1)

group together a community of companies of various sizes around a "locomotive", vector of ecosystems projects and get all the actors concerned by innovation and creativity adhere to it.
It should be noted that the previously developed projects are very promising in terms of " intent's declaration ". But do we have the material and human means to ensure a spatially equitable distribution? Shouldn't we cross clusters, LPS, P2I with a kind of territorial plans of economic cooperation to establish what we can qualify as a model of Socially and Spatially Equitable Productive Systems

Conclusions

To report of a certain correspondence between the evolution of the productive systems and the restrictions of the territories, a general grid can be presented. Three highlights of a such evolution are: the pre-Fordism, the Taylorophordism and the post-Fordism. We will retain in parallel respectively: the complexes of workshops and factories of the 19th century, the regions of mass production Fordist and the revenge of the local through the LPS and the current phenomenon of "glocalization".

Without going back on the controversy regarding the opportunity to appeal to foreign firms (Mc Kinsey in particular) and the national competence's calling into question in the matter, let us retain a kind of management by objective by recognizing the contribution of the program "emergence" as diagnostic analysis of the country's economy. Indeed, some analysts speak of "ant work", others of interference and waste but there is agreement on the fact that the Program "emergence" presents an instant cut, of what is our economy; especially that, an effective therapy requires at first a good and accurate diagnosis.

Driven; at least formally, by this logic, the Minister of Industry of the time recognizes that the issue of the moment dictates the following imperatives:

- Dynamic management of existing fabric and respect for balances;
- Get out of the defensive and restrictive logic that underpinned the MAN approach;
- Revitalize and modernize the fabric by redesigning the existing system;
- Accelerate long-term cross-cutting reform projects;
- Allocate resources in line with issues and priorities.

Indeed, according to the specialized press, "For the Emergence program to succeed, it is not enough to provide benefits and train the workforce. There is also a need for general coordination involving several actors including five ministerial departments, the wilayas and project facility regions, the Regional Investment Centers, the Investment Department, the Inter-Ministerial Investment Commission, territorial governments and local authorities. To entrust the task to a single ministry would be utopian. The idea is to set up a dedicated agency. »22
Taking the globalization's train requires to enter the digital sphere and attract services outsourcing activities (processing of financial, accounting and banking information or even teleservices). However, the real economy (industrialization in mind) remains the single leader in the dynamic transformation of productive but also spatial structures. This is a living dialectic dictating that the productive system acts on the territorial morphology and conversely the spatial logic recommends the productive activities.

This is how we talk about a spatial evolution of the Moroccan territorial chessboard linked to that of its productive system. Indeed, "independent" Morocco has moved - at least at the level of discourse - from industrial districts, to industrial zones and then to industrial parks that come to support the so-called integrated industrial platforms or P2I, whose designation even attests to "modernity". However, it remains to be seen whether this dynamism will be part of the continuity or will simply serve as a marketing map for the current government era?

This question is legitimate especially since the productive and spatial dynamics must rhyme with the new dynamic of institutional reforms in favor of a more advanced vision of regionalization. According to the king, "the desired enlarged regionalization is not limited to a simple technical or administrative development. It embodies a choice assumed for the renovation and modernization of state structures, and the consolidation of integrated development. "Regionalization will only; be balanced and national in scope, if the optimal exploitation by each region of its own strengths and potentialities, is correlated and concomitant with the establishment of efficient mechanisms of solidarity, embodying the interregional complementarity and cohesion in a united Morocco "(Royal speech of 3 January 2010).

References

Belal, A. 1976. Investment in Morocco, Rabat, Morocco, published by Maghrebian Editions,

Benaceur, O. 1993. The role of local authorities in the industrial zones' development, Graduate degree (D.E.S), the National Institute of Planning and Urbanism (INAU), Rabat, Morocco.

Bounot, J. 2003. The Smart City, Published by L.G.D.J, Paris, France.

Braconnier, B. 2001. Local actors and tourism development issues in Zagora, Master's thesis in geography, University of Tours.

Department of Studies and Financial Forecasts (DEPF), January 2010, "Regions of Morocco: Sectoral Contributions to the Creation of National Wealth", Publications of the Moroccan Ministry of Finance, Rabat, Morocco.

Doing Business http://www.doingbusiness.org/content/dam/doingBusiness/country/m/morocco/MAR.pdf

Ecochard, M. 1951. The industrial districts of the cities of Morocco ", Urbanism Review N° 11-12-1951.

Eddelani, O. 2008. Cluster: innovation ecosystem and incubator of competitive organizations and smart territories, case of the Fès-Boulemane region", ASRDLF symposium, August 25 - 27, Rimouski. Canada In: http://asrdlf2018.com/sites/default/files/programme_asrdlf_v14.pdf

Eddelani, O. 2014, Globalization, productive and spatial restructuring, what prospects for Morocco, RIGA, Latvia, published by PAF (Francophone Academic Press).

El Merghadi, M. et al. 1993. Economic interventions of local authorities, symposium, 9 - 12 February, Fez, Morocco. Published at the symposium's proceedings of the and the law and economics magazine published by the Faculty of Law, Economic and Social Sciences, N ° 9 - 1993.

Guerraoui, D. 1998. Prospects of an integrated regional development", Economic Views, N ° 10-1998 GPM, Morocco.

Kaioua, A. 1993. Production and management of industrial zones: the case of Greater Casablanca, Economic interventions of local authorities, Review of Law and Economics, Fez, 9: 161-178.

Kiselitsa, E.P., Shilova, N.N., Liman, I.A, Naumenko, E.E. 2018. Impact of spatial development on sustainable entrepreneurship, *Entrepreneurship and Sustainability Issues* 6(2): 890-911. http://doi.org/10.9770/jesi.2018.6.2(28)

Mayorova, A.N., Panasenko, S.V., Nikishin, A.F., Ivanov, G.G., Mayorova, E.A. 2018. Analyzing regional differences in the condition and development of trade in Russia, *Entrepreneurship and Sustainability Issues* 6(2): 927-938. http://doi.org/10.9770/jesi.2018.6.2(30)

Mikhaylov, A.S. 2018. Socio-spatial dynamics, networks and modelling of regional milieu, *Entrepreneurship and Sustainability Issues* 5(4): 1020-1030. http://doi.org/10.9770/jesi.2018.5.4(22)

Ministry of Industry, Investment, Trade, and the Digital Economy, 2017, Industrial Acceleration Plan, http://www.mcinet.gov.ma/fr/content/plan-d'acceleration-industrielle

Monni, S., Novelli, G., Pera, L., Realini, A. 2017. Workers' buyout: the Italian experience, 1986-2016, *Entrepreneurship and Sustainability Issues* 4(4): 526-539. http://doi.org/10.9770/jesi.2017.4.4(10)

Morocco Digital Cluster report. 2014. http://www.marocnumericcluster.org/

Sefrioui, F. 2003. Company Morocco. Performance and vulnerability thresholds of the industrial production system at the time of globalization, Editions ", Paris, Published by L'Harmattant.

Tarik, E. 1981. « Infrastructure et développement au Maroc », Casablanca, published by Stouky.

Troin, J. F. 2002. Morocco - Regions, countries, territories, Casablanca, published by Tarik.

Zeriouli, M. 1996. Edification of the economic region, PhD report, Rabat, morocco, published by Faculty of Law, Economic and Social Sciences, University Mohamed V.

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A STEP-BY-STEP APPROACH TO SOCIAL MARKETING IN ENERGY TRANSITION *

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Abstract. By examining social marketing this articles has featured a step-by step approach for residential behavioural change towards sustainable energy transition. Specifically, this article considers the value-based approach instead of rational information campaigns for behavioural change of energy users. The proposed framework is based on environmental values and designed to transform the selected destructive behaviour into a sustainable one. The framework consist of five steps: (1) selecting the behaviour, (2) user orientation, (3) exchange, (4) marketing mix: elements of intervention, (5) measuring behaviour change. As behavioural change is the final goal of any energy efficiency campaign, it becomes also a starting point and an objective of the rest of the activities in the framework. Second, we suggest using the user orientation concept that divides the society into three groups based on their attitude towards environmental issues, i.e. environmentalist, the environmentally concerned and the disinterested. In the third step we apply the exchange theory; whereas in the step of 'marketing mix' a conceptual combination of six elements for energy transition is reasoned: proposition, cost, communication, communities and partnership. Finally, the fifth step stresses on the measurement of the behavioural change that enables energy transition. The proposed step-by step framework is based on theory and builded on current practice in a field that is analysed in the article.

Keywords: energy transition; renewable energy sources; household; social marketing; communication campain

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JEL Classifications: M3, M36, D83, O1, P48

Additional disciplines (besides field of economics reflected in JEL classifications): information and communication

1. Introduction

Accelerating the clean energy transition needs to be high not only on the agendas of technological development but also on user behavioural change policies and practices. Climate change is understood primarily as the outcome of irresponsible demand and consumption of energy. For that reason, attitudinal changes of society at large and household users in particular towards energy consumption are vital in the transition towards sustainable energy. With regard to this approach, governmental and nongovernmental institutions are using social marketing to change behacižviuor of energy users and to speed up energy transition. This is especially important as European Union has set a new target to reach 27% final energy consumption from renewable sources by 2030 (2030 Energy Strategy, 2014), and this necessitates "not only on the enforcement of the policy measures and goals that have been set, but also on lifestyle choices, e.g. in terms of living space, consumption patterns, etc." (*Household energy consumption*, 2018). Thus, the society and individuals is a key but often ignored player in energy transitions.

Social marketing is particularly relevant as it is capable to change the behaviour of individuals and households in energy use. These users can play a rather different role in energy system if energy users' behaviour is changed into energy saving habits. Taking into consideration that "households are accountable for nearly three-quarters of global carbon emissions" (Strachan, Cowell, Ellis, Sherry-Brennan, & Toke, 2015), it is essential to apply social marketing that transforms destructive behaviour resulting in these emissions. In this context a sustainable energy transition means significant changes not only in policies and law but also in users' behaviour.

The role of social marketing in energy transition is of great interests to researchers and policy implementers. Despite numerous research has already demonstrated some value of social marketing in promoting energy efficiency (Anda & Temmen, 2014; Gordon, Butler, Cooper, Waitt, & Magee, 2018; Gordon, Dibb, Magee, Cooper, & Waitt, 2018), the current research opens new challenges that need to be addressed. The data on energy users behaviour indicates high resistant to change resulting inclination of cost-effective opportunities (F Beckenbach & Kahlenborn, 2016; Hahn & Metcalfe, 2016). In that follows a need for more sophisticated benefit-focused social marketing approach.

The objective of this paper is to provide the research community with a comprehensive step-by-step approach to social marketing for energy transition. We present a general discussion of the mainstream and social marketing application in promoting sustainable energy use and energy conservation. We then revise the framework of social marketing by strengthening value-focused approach and by creating a step-by-step process of social marketing application for behavioural changes toward energy transition. Additionaly, we review marketing mix and propose its compotion of six elements: proposition, cost, accessability, communication, communities and partnership. In the article we occasionally use empirical results and cases to illustrate how the elements of our conceptual approach are being implemented in practice.

2. Energy User: an impact of Energy Efficiency Paradox

Many scholars, who perceive the public as being rational, take users' needs and wants into consideration and emphasise the economic benefit of energy efficiency. This perception, however, is not enough as energy

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

efficiency paradox takes place. There we will briefly analyse the impact of this paradox on the behaviour of energy users.

On the one hand, economic benefit is a very important stimulus for behavioural changes. When social marketing campaigns take place, they highlight the economic value of participating in a specific activity, for instance, when using energy star-qualified bulbs, installing photovoltaic (PV) panels in residential buildings, or using other greener forms of energy for lighting and heating. The benefit or value-in-behaviour in using energy efficiently is based on the understanding that the public is rational and each household will act in its economic self-interest (Butler, Gordon, Roggeveen, Waitt, & Cooper, n.d.; Evans et al., 2014). Consequently, economic values have become the core message in social marketing campaigns to achieve energy efficiency.

On the other hand, there are a number of examples of inefficient residential energy efficiency campaigns that ignored the value of social interaction and relied solely on information delivery regarding the economic value of the new behaviour. The cases (McKenzie-Mohr, 2000) provide a range of evidence on non-significant impact of energy efficiency campaigns. In economic literature this phenomenon is called Energy Efficiency Paradox when users neglect cost-effective opportunities and do not take logical measures at current energy prices to decrease their spending on energy (Baublys, Miškinis, Konstantinavičiūtė, & Lekavičius, 2015; Ramos, Gago, Labandeira, & Linares, 2015). It is clear that information about economic benefit is not enough to change users' behaviour. Therefore, a more sophisticated value-focused social marketing approach is needed as different benefits are of value importance for individual users. The perception what value is can vary. It could be willingness to cut energy bills or minimizing energy poverty, increasing energy security or to fighting climate change. Taking the spectrum of needs into consideration, we review the principles and tools of social marketing in promoting sustainable energy use.

3. An application of social marketing in promoting energy transition

The potential of social marketing in promoting energy transition lies in the domain of traditional marketing, but instead of selling goods and services it changes the behaviour to increase the well-being of households and communities(Kotler & Lee, 2016b; S. Peattie & Peattie, 2016a; Stead & Hastings, 2018). Once social marketing is advocating energy efficiency, it is usually associated with reducing consumption and decreasing demand for unsustainable energy sources. However, it is important to realize that the intention to 'reduce' and 'decrease' contradicts the common culture of consumerism; therefore, the tools for this purpose have to be revised.

Probably the most adopted approach to using social marketing tools for sustainable energy use has been developed by McKenzie-Mohr (2000). According to him, social marketing can be very effective if it is community-based instead of being an information-intensive campaign. McKenzie-Mohr's framework of the former enhances energy efficiency in several steps. First McKenzie-Mohr (2000) suggests selecting the behaviour we need to change. Second, following the exchange theory, he proposes identifying barriers and benefits of the new behaviour and designing a strategy to remove the obstacles to reach the goal. Finally, strategy is piloted in a small segment of society. McKenzie-Mohr's framework is simple and practice-oriented. For this reason it is used for residential energy efficiency programmes by the US Department of Energy ("Community-Based Social Marketing Toolkit," 2017). However, it is worth mentioning that McKenzie-Mohr's approach is oriented exclusively towards small communities; therefore, the vital three-stage marketing research process (segmentation, targeting and positioning) is excluded.

To overcome the limitations of McKenzie-Mohr's model the missing steps of comprehensive marketing research have to be integrated. According to Kotler & Lee, 2016, thus social marketing is different from the commercial one, the former has to follow the principles of the latter in changing the behaviour for societal gain. They provide six main principles for any social marketing. According to the authors, any social marketing strategy has to start

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

with user-orientation. This step turns all marketing activities towards the needs and wants of individuals to change their behaviour. They also point out that an exchange is the main theoretical concept. The users must perceive the value of changing their behaviour. Therefore marketing research is carried out from the very beginning till the very end. An effective strategy is developed only if specific needs and wants of a target audience are understood and reflected in the entire process of behavioural change. Fir this reason, marketing research provide evidence for decision making. Additionaly, marketing decisions have to be different for different target audiences due to their specific needs and wants, thus users are divided into segments. Kotler & Lee (2016) expand further by including segment oriented activities in a marketing mix. The strategy is implemented with an integrative approach and activities are not limited to persuasive communication only. They conclude with results measurement as social marketing is continuously improving its performance based on the feedback.

Very similar principles are presented by Peattie & Peattie (2009). Additionally, authors emphasise not only the behavioural change, but also the behavioural maintenance when social marketing goes beyond decreasing consumption. They stress the importance of adoption and maintenance of significantly different lifestyle.

Following these viewpoints, the redesigned social marketing process consists of five steps: (1) selecting the behaviour, (2) user orientation, (3) exchange, (4) marketing mix: elements of intervention, (5) measuring behaviour change for energy transition (Fig. 1). The process integrates three vital elements of marketing research as user orientation is composed of three-step marketing research process including user segmentation, targeting and positioning.

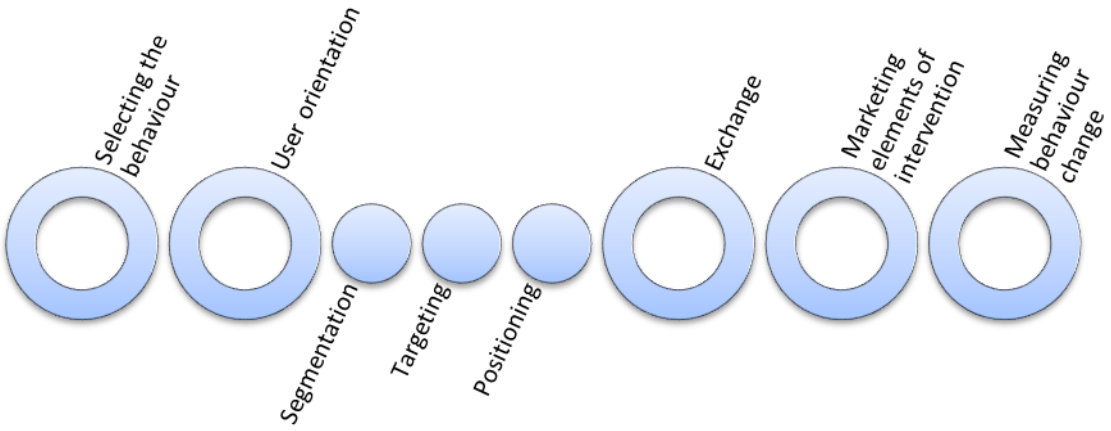

Fig.1. Elements of Social Marketing for Sustainable Energy Use

Source: Bird, 2010; Dibb, 2014b; Kotler & Lee, 2016; K. Peattie & Peattie, 2009; S. Peattie & Peattie, 2016

Step 1: Selecting behaviour for sustainable energy use

Behavioural is the final goal of any energy efficiency campaign and the starting point when considering social marketing. According to Rangan & Karim (1991), social marketing is about "changing attitudes, beliefs, and behaviours of individuals or organizations for a social benefit <…> and the social change is the primary purpose of the campaign". Even though the change is the backbone of social marketing, it is essential to note that it is neither a person's donation nor a sacrifice, it is rather a conscious participation in the process of exchanging costs

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

and benefits. There are many examples of deliberate and targeted energy efficiency marketing campaigns organized by municipalities with measurable objectives of behavioural change (Gynther, Mikkonen, & Smits, 2012). Projects on energy efficiency integrate research, best practices and theories of social marketing to understand attitudes as well as the social context in which the demanded behavioural change has to occur. In such projects, destructive behaviour is selected and targeted with marketing mix.

Taking Amsterdam's Circular Innovation Programme as an example, we can observe how this theoretical approach of behaviour selection is implemented in practice. The end goal of the city programme is to implement a circular economy that "requires rethinking market strategies and models that encourage competitiveness in different sectors and the responsible consumption of natural resources" (*Circular Economy in Cities*, 2018). It is expected that this shift would change production processes and consumer behaviour as the programme not only stimulates energy savings and investments into solar energy, but also tries to transform the mind-set of the residents. New solutions for energy saving (including food and water cycles) and new forms of renewable energy (using innovative collection and sorting of waste, etc.) are based on behavioural changes of Amsterdam residents (*Amsterdam's Circ. Econ. Roadmap*, 2018; "Circular City," n.d.; *Circular Economy in Cities*, 2018). What is important, values and behaviour of the local community were perceived as vital by programme implementers.

Step 2: User orientation

The second step deals with three stages of marketing research process, i.e. segmentation, targeting and positioning. This essential process helps operationalize the concept user-oriented and puts marketing theory into practice. Although these three stages have been developed (and are actively used) as concepts of commercial marketing with the intention to sell the goods, nowadays they have become a vital part of behavioural change interventions for social purposes (Dibb, 2014). Their application for effective energy use is rather straightforward; however, it is not as wide as in business. Let's discuss the meaning and application of these three concepts.

Step 2 A: Segmentation

Energy users' segmentation divides a large population into groups according to their shared values, wants and needs. According to segmentation theory, people in the same group are likely to respond to behavioural interventions similarly. Typically, population is segmented according to demographic characteristics (such as age, gender, ethnicity, etc.); however, as technologies of the internet-era shape everyday behaviour, energy users' behaviuor is based more on attitudes and lifestyles than on wants and needs (Pothitou, Hanna, & Chalvatzis, 2016). As a result, segmentation of energy users identifies one or more segments in the target audience according to lifestyle and values (Thøgersen, 2017). Segmentation is based on an in-depth understanding that it is impossible to be effective across all the population. It, therefore, has to be segmented into groups and only a few segments can be targeted with social marketing mix.

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

Table 1. Segmentation of UK and US Populations According to the Attitude towards Environment and Climate Change

Segment of population		Segment description
UK	**Germany**	
Positive greens	Alarmed	Environmentalists: are very worried about environmental issues; environment-friendly behaviour makes them feel better
Waste watchers		
Concerned consumers	Concerned Activists	
Side-line supporters		
Cautious participants	Cautious	Environmentally concerned: are generally concerned about the environment, but behave environment-friendly only because of constrains
Long Term Restricted		
Stalled starters	Doubtful	Disinterested: they tend towards apathy when it comes to environmental issues, environmental issues do not resonate with them
Honestly disengaged	Disengaged	

Source: Defra, n.d.; Giorgi, Fell, Austin, & Wilkins, 2016; Metag, Füchslin, & Schäfer, 2017

As already mentioned, social marketing adopts the methods of commercial marketing, yet its purpose is very different. In business, the same segments are targeted with a variety of accompanying products they might prefer to use. In contrast, social marketing targets behaviour only with one goal and this goal is usually associated with the decrease in consumption (Ramirez, Tajdini, & David, 2017). There are a few segmentation approaches developed to understand how a population can be segmented according to its attitude towards the environment. As an example, table 1 presents segmentations of UK and Germany's markets. According to these segmentation examples, energy users can be divided into three large groups based on their attitude towards environment – environmentalists, the environmentally concerned and the disinterested. How large these groups are and how many segments compose each group depends on values of the society at large. As we can sees form the UK and Germany segmentation results, UK society is more fragmented; the segmentation identifies more unique segments that differentiate them in the attitude and consumption.

Step 2 B: Target audience

One or a few target audiences are selected after a population is divided into groups according to demographic, value-based, lifestyle and behavioural criteria. This step requires consideration regarding the potential efficiency of each segment. According to the mainstream marketing authors, any target audience has to meet several criteria. These criteria vary from authors to authors and organizations have to choose the most important ones according to their marketing objectives and measurement benchmarks (T Dietrich, Rundle-Thiele, & Kubacki, 2017; Sarstedt & Mooi, 2014; Tvaronavičienė, Mentel, & Chyrva, 2018). In spite of differing views on targeting, there is a common agreement in mainstream as well as in social marketing literature about three most important criteria (Bruwer, Roediger, & Herbst, 2017; Kotler & Lee, 2016): target audience has to be large enough to make marketing programme effective in scale, each segment of the target audience needs different benefits and target audience is accessible with marketing messages.

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

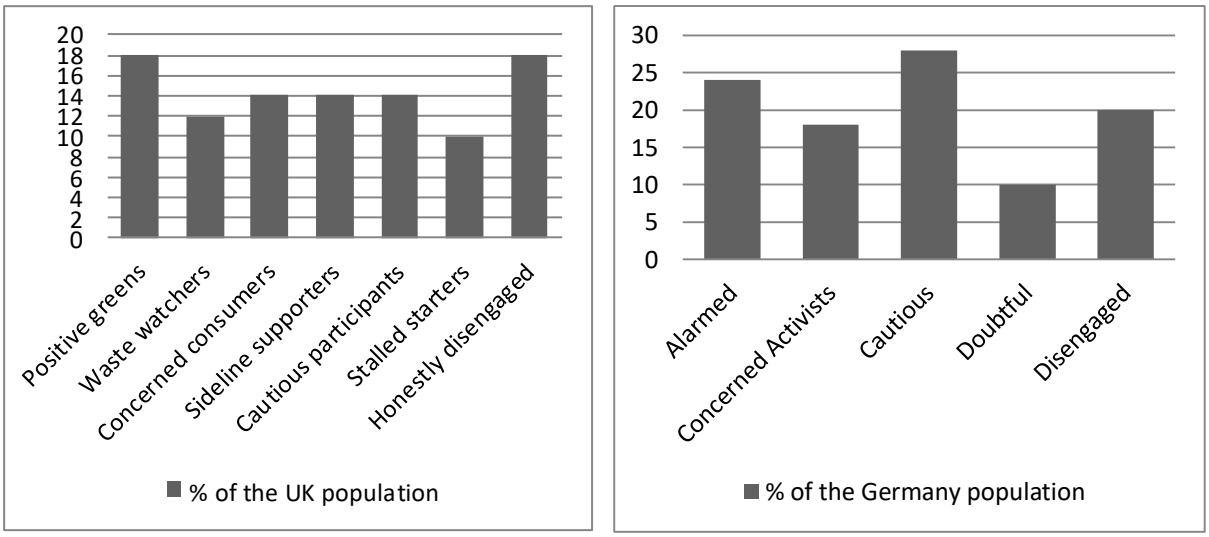

Fig.2. Distribution of UK and Germany Populations According to the Attitude towards Environment and Climate Change

Source: Defra, n.d.; Giorgi, Fell, Austin, & Wilkins, 2016; Metag, Füchslin, & Schäfer, 2017

To continue the examination of UK and Germany's segmentation examples, segmentation divides population into nearly equal and substantial groups according to their attitude towards environmental issues and willingness to act on behalf of the environment (Fig. 2). The UK's case in particular illustrates good practice in targeting an audience as each segment not only differs in terms of needs, they also were reached with effectively selected marketing messages (Chatterton, 2011). According to Giorgi et al. (2016) some audiences received "only information, whereas others received a mixture of information and activities, depending on the target and existing behaviours and attitudes". Hence, we see not only segmentation, but also targeting which is based on segmentation results.

Step 2 C: Positioning against competing alternatives

Thermal comfort, car dependency and other lifestyle norms compete against behavioural interventions that would lead to sustainable energy use. It is the issue that social marketing is trying to solve by using positioning, i.e. an act that distinguishes the offer from the competing alternatives, makes it even more attractive and provides inspiration and parameters as to "how [...] the desirable behaviour [has] to be seen by the target audience" (Kotler & Lee, 2016). In social marketing positioning statement shows how to overcome the barriers for the new behaviour. The most powerful positioning is based on the message 'energy-saving' (Ben & Steemers, 2018), but the message itself has to integrate different values for different segments of any behaviuoris based on needs, wants and values. Additionally, Giorgi et al. (2016) suggest that the positioning statement has to provide real examples that show how others are doing and what additional value the behavioural change can bring. Once this statement is developed, specific strategies as to how position new demanded behaviour are developed and implemented in the stage of the marketing mix.

Step 3: Exchange

As it was already discussed, voluntary exchange is a mainstay of social marketing. According to the exchange theory, social marketing has to offer users benefits in exchange for their behavioural change. Giorgi et al. (2016) point that users agree to change their behaviour towards more sustainable energy use in exchange for lower cost, convenience and lifestyle choice. Respectively, marketers have to consider the alternatives as to what will

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

motivate users to change their behaviour and what should be offered as a value in exchange. The only concern is that the meaning of value is different for different segments. The exchange in energy consumption can be motivated by self-interest, social norms or concern for the common good. While environmentalists "can leave comfort and cleanliness behind in the pursuit of a contemporary natural purity" (*Energy use behaviour change*, n.d.), the disinterested change their behaviour solely because of cost saving. This, consequently, leads to different proposals for behavioural change. They can be very simple or complex depending on the segment and its willingness to change, i.e. adjust the temperature, use more efficient vehicles, avoid unnecessary flights, manage energy better, recycle more, waste less food, etc. (Jonkhof & van der Kooij, n.d.).

Giorgi et al. (2016) provide a comprehensive list of proposals how to offer value to a different target audience based on their attitudes and preferences. For environmentalists, they suggest specific measures that would help incorporate changes into their lifestyles; while for the disinterested cost saving has to be the key entry point to stimulate their behavioural change. Despite different attitudes and preferences, research results show that all segments are more willing to participate in exchange when its value is clear (Korsakienė, Tvaronavičienė, & Smaliukienė, 2014; Ramos et al., 2015).

Probably the most interesting case of social marketing exchange is presented by a fossil fuel subsidy reform in Iran. The core of the reform was to increas county's competitiveness in global labour market by increasing price for petroleum products by 4 times (Rentschler & Bazilian, 2018). As an exchange proposition government implemented a structured cash transfer scheme. The government's subsidy reform on energy was "carefully prepared by clear government communication through various channels, such as websites and hotlines to answer questions about the reform" (*Emissions Gap Report*, 2018). The value-in-exchange in this case was "country's economic competitiveness by creating more jobs and using its oil resources more efficiently" (Atansah, Khandan, Moss, Mukherjee, & Richmond, 2017); additionally this value was enforced by "structured cash transfer scheme and its timely implementation" (Rentschler & Bazilian, 2018) which became a backbone for public support of Iran's fossil fuel subsidies reform in 2010. As can be seen, economic prosperity of the country was used as value for effective exchange.

Step 4: Marketing mix

The marketing mix is the core concept adopted from commercial marketing for the behavioural intervention. While commercial marketing mix is created of 4P (product, price, place and promotion) or 7P (people, product, price, promotion, place, process and physical evidence) (Lovelock, Patterson, & Wirtz, 2015), social marketing mix contains 8 elements (product/service, price, place, promotion, public, partnership, policy, purse strings) (S. Peattie & Peattie, 2016b). These elements are compared in the Table 2 in first and second columns. This way, social marketing solves more challenging tasks than any business. Despite following the 8 elements of social marketing mix, the application of marketing tools and techniques remains problematic in promoting sustainable energy. Accordingly, Giorgi et al. (2016) suggest moving away from the traditional marketing mix and propose to abolish the elements that come from commercial marketing. Whit regard to the former, we argue that marketing mix for energy transition consists of six interrelated marketing mix elements (Table 2, third column):

1. Proposition: proposition replaces traditional marketing mix element 'product', as 'product' is difficult to interpret in energy transition as it is realated to behavioural changes. Social marketing, as it was mentioned previously, is oriented towards a new effective behaviour that changes the lifestyles of individuals or communities; therefore, when using this term one can mean a conscious energy usage at home or house renovation as well as a new tax reform that introduces a tax for carbon emissions. Authors (S. Peattie & Peattie, 2016b) suggest using the concept 'social marketing proposition' instead. Additionally, they suggest using a clear narrative on how the behavioural change would benefit the users.
2. Cost: scholars propose to change the element 'price' into 'cost' (Dibb, 2014) as the latter can deal with both monetary costs as well as the costs of inconvenience.

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(2)

3. Accessibility: there is challenging to get access to the groups that ar remoted or are in economic or social exclusions. In social marketing for energy transition thes groups are individuls and communities under energy poverty and energy inaccessibility, they are "the least accessible, hardest to reach and least likely to change their behaviour" (Menegaki, 2012). Accrdingly, accesability in social marketing for energy transition means accessibility of clean energy product and the channels through which consumers are reached for information.
4. Communication: the element 'communication' replays element 'promotion', as social marketers most frequently deal with negative demand. The targest groups are apathetic or resistant to change thei behaviuor. As it was stated in the UN *Emissions Gap Report* 2018, there is a need to increase public awareness about the greater impact of their behaviour on cleaner air and human health. Hence, two way communication that builds up confidence and trust is more efficient that promotion only.
5. Communities: social marketing mix emphasizes the interrelationship and impact of a community and society on a person's behavioural change. Hence, Gordon, Dibb, et al. (2018) convert social marketing mix into a new model with five interrelated elements where the last one is communities. The model enhances the understanding of communities and other stakeholders and their impact on behavioural change. Moreover, it resonates with other contemporary approaches in marketing and behaviour such as the theory of value co-creation and value co-production (Osborne, 2017; Smaliukiene, Chi-Shiun, & Sizovaite, 2014; Vargo, Maglio, & Akaka, 2008). Most importantly, new approaches on marketing mix stress the importance of users' motivation as it directs their behaviour.
6. Partnership: the element of 'partnerships' refers to public-private partnership in providing and communicating value. Behaviuoral change for energy transition is complex phenomena that demand co-operations with other stakeholder with similar goals form public as well as privat sector. One of the most illustrative examples of partnership in social marketing is represented by Amsterdam's Circular Innovation Programme. The programme implementation is based on the cooperation between policy content experts and communication and marketing companies (*Benchmarking study: Amsterdam –branding at its best*, 2018). Another similar example is Brussels Regional Program for a Circular Economy 2016-2020 where comunity's behaviuoral change are target by municipal as well as by governmental institutions and communication agencies ("Arctik: Communication for Sustainability," n.d.). Botho of these cases provide evidences that partnership is the key of the marketing approach.

Table 2. Marketing Mix Conversion for Energy Transition

Commercial marketing mix 7 (P's)	**Social marketing mix 8 (P's)a**	**Social marketing mix for energy transition**
1. Product/Service: features, packaging, performance characteristics	1. Product/Service: proposition; specific behavior that the social marketer wishes to see	1. Proposition: proposition for exchange and rewards after the behavior is established
2. Price: selling price, trade margins, credit terms, other cost to customer	2. Price: cost of involvement	2. Cost of changing behaviour (financial and non-financial)
3. Place: (including cyberspace and time): types and locations of distribution channels, coverage	3. Place: product accessibility, access to alternative means of achieving satisfaction.	3. Accessibility: product accessibility and the channels through which consumers are reached for information
4. Promotion: all means to persuade to buy	4. Promotion: social communication, interaction and relationship building.	4. Communication: social two-way communication, all means for building up confidence and trust
5. People: staff, customers management, customer empowerment, customer co-production	5.Publics: target audience, secondary audiences, policymakers, other stakeholders, social networking, participation of citizens, endorsement of celebrities	5. Communities: co-creation, social networking, participation of residents
6. Physical evidence: servicespace, elements of physical layout	6. Partnerships: invitation to diverse stakeholders.	6. Partnership: public-private partnership in providing and communicating value
7. Process: process requirements, self-service, online service	7. Policy: legislation, institutional framework, access to information and subsidies.	

Source: Lovelock, Patterson, & Wirtz, 2015a; Menegaki, 2012; K. Peattie & Peattie, 2009; S. Peattie & Peattie, 2016

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Step 5: Measuring behavioural change for sustainable energy use

Evaluation of behavioural changes can generate strong implications about the impact of social marketing and confront criticism regarding the value of the intervention. However, many social marketing programmes are either evaluated poorly or not at all (Grier & Bryant, 2005). An example of existing good practice is the case of the city of Macau (China) where social marketing results were quantified. According to the project's report (Song, Li, Duan, Yu, & Wang, 2017), energy-saving publicity campaigns were conducted in schools and for the general public as well as for the business sector. The campaign increased public awareness and knowledge which resulted in the population acting more responsibly. As a result, energy-saving behaviour became very common in the daily life of city residents and businesses. This social marketing campaign was measured in terms of decreasing energy consumption per capita which was 10% at the end of the project.
Since social marketing is often a continuing activity that runs over long periods of time, it is not easy to do so. That is why impact evaluation looks at the effect rather than the outcome of each programme. Alternative evaluation, on the other hand, provides important insights while observing behavioural changes instead of measuring energy saved. While impact evaluation deals with user-specific information that is collected through surveys, interviews, consumer panels, opinion polls, feedback from programme participants, etc. (*Case studies on innovative communication campaign packages on energy efficiency*, n.d.), actual evaluation or the cost-effectiveness of the programmes are very difficult as social marketing aims to change the behaviour of energy users. An application of marketing management approach can substantialy contribute in solving an issues with measuring behavioural change, as measurable objectives become the core of all social marketing activities.

Conclusions

By examining social marketing within the context of energy transition this articles has featured the step-by step approach for residential behavioural change towards sustainable energy consumption. Specifically, this article considers the value-based approach instead of rational information campaigns for behavioural change of energy users. In particular, it is important to realize that the behaviour of household users is irrational and their energy consumption is often driven by their lifestyle and values rather than by economic-rational motives. Thermal comfort, car dependency and other lifestyle norms compete against behavioural interventions that would lead to sustainable energy use. Taking this irrationality and complementing contemporary theoretical advantages into consideration, we suggest five stage social marketing framework for residential energy transition.

The new framework is designed to transform the selected destructive behaviour into a sustainable one. First step in our framework is selecting behaviour. As behavioural change is the final goal of any energy efficiency campaign, it becomes also a starting point and an objective of the rest of the activities. Second, we suggest using the user orientation concept that divides the society into three groups based on their attitude towards environmental issues, i.e. environmentalist, the environmentally concerned and the disinterested. In the third step we applying the exchange theory and point out what would motivate users to change their behaviour and what should be offered as a value in exchange. When considering the latter, segmentation results are likely to have the strongest impact on this decision. The fourth step of our framework is marketing mix. We propose to reconsider social marketing mix and reframe it in accordance with energy-user behaviour matters. Finally, the fifth step is measuring behavioural change that enables energy transition.

As an integral part of our framework, we ground a six elements' marketing mix for energy transition. Our proposal is based on marketing mix of mainstream and social marketing theory as well as best practices in the field. According, marketing mix for energy transition has six elements: (1) proposition for exchange and rewards after the behaviour is established, (2) cost of changing behaviour (financial and non-financial), (3) accessibility and the channels through which consumers are reached for information, (4) social two-way communication that

includes all means for building up confidence and trust, (5) communities that are involved in co-creation, social networking and other kind of participation that fosters behavioural change of society at large and each household individually, (6) public-private partnership in providing and communicating value.
This paper extends the literature by arguing that there is a need for a value-based approach towards residential behavioural change for energy transition. This approach is equipped with a step-by step framework which is grounded on theory and build on current practice in a field.

References

2030 Energy Strategy (2014). Retrieved from https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2030-energy-strategy

Amsterdam's Circular Economy Roadmap. (2018). *Case Study*. Retrieved from https://www.c40.org/case_studies/amsterdam-s-circular-economy-roadmap-lessons-learned-and-tools-for-upscaling

Anda, M., & Temmen, J. (2014). Smart metering for residential energy efficiency: The use of community based social marketing for behavioural change and smart grid introduction. *Renewable Energy*, *67*, 119–127. https://doi.org/10.1016/j.renene.2013.11.020

Arctik: Communication for Sustainability. (n.d.). Retrieved February 5, 2019, from http://arctik.eu/projects/49

Atansah, P., Khandan, M., Moss, T., Mukherjee, A., & Richmond, J. (2017). *When Do Subsidy Reforms Stick? Lessons from Iran, Nigeria, and India*. Retrieved from https://www.cgdev.org/publication/when-do-subsidy-reforms-stick-lessons-iran-nigeria-and-india

Baublys, J., Miškinis, V., Konstantinavičiūtė, I., & Lekavičius, V. (2015). Energy Efficiency as Precondition of Energy Security. *Journal of Security and Sustainability Issues*, *4*(3), 197–208. https://doi.org/10.9770/jssi.2015.4.3(1)

Beckenbach, F., & Kahlenborn, W. (2016). *New Perspectives for Environmental Policies Through Behavioral Economics*. (F. Beckenbach & W. Kahlenborn, Eds.). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-16793-0

Ben, H., & Steemers, K. (2018). Household archetypes and behavioural patterns in UK domestic energy use. *Energy Efficiency*, *11*(3), 761–771. https://doi.org/10.1007/s12053-017-9609-1

Benchmarking study: Amsterdam –branding at its best. (2018). *Future Place Leadership*. Retrieved from https://futureplaceleadership.com/wp-content/uploads/2018/04/Case-Amsterdam-by-Future-Place-Leadership.pdf

Bird, S. (2010). Benchmark Criteria for Social Marketing. Retrieved from https://www2.uwe.ac.uk/faculties/BBS/BUS/Research/BSMC/Spotlight_2.pdf

Bruwer, J., Roediger, B., & Herbst, F. (2017). Domain-specific market segmentation: a wine-related lifestyle (WRL) approach. *Asia Pacific Journal of Marketing and Logistics*, *29*(1), 4–26. Retrieved from https://www.emeraldinsight.com/doi/abs/10.1108/APJML-10-2015-0161

Butler, K., Gordon, R., Roggeveen, K., Waitt, G., & Cooper, P. (n.d.). Social marketing and value in behaviour? *Journal of Social Marketing*, *6*(2), 144–168. https://doi.org/10.1108/JSOCM-07-2015-0045

Case studies on innovative communication campaign packages on energy efficiency. (n.d.). Retrieved from https://hub.globalccsinstitute.com/publications/energy-efficiency-recipe-success/case-studies-innovative-communication-campaign-packages-energy-efficiency

Chatterton, T. (2011). An introduction to thinking about'energy behaviour': A multi-model approach. Retrieved from http://www.decc.gov.uk/assets/decc/11/about-us/economics-social-research/3887-intro-thinking-energy-behaviors.pdf

Circular City. (n.d.). Retrieved January 13, 2019, from https://amsterdamsmartcity.com/themes/circular-city
Circular Economy in Cities. (2018). *White Paper*. Retrieved from http://www3.weforum.org/docs/White_paper_Circular_Economy_in_Cities_report_2018.pdf

Community-Based Social Marketing Toolkit. (2017). US Department of Energy, Office of energy efficiency & renewable energy. Retrieved from https://www.energy.gov/eere/better-buildings-residential-network/downloads/community-based-social-marketing-toolkit

Defra. (n.d.). A Framework for pro-environmental behaviours (January 2008). Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69277/pb13574-behaviours-report-080110.pdf

Dibb, S. (2014). Up, up and away: social marketing breaks free. *Journal of Marketing Management*, *30*(11–12), 1159–1185. https://doi.org/10.1080/0267257X.2014.943264

Dietrich, T., Rundle-Thiele, S., & Kubacki, K. (2017). *Segmentation in Social Marketing*. (T. Dietrich, S. Rundle-Thiele, & K. Kubacki, Eds.). Singapore: Springer Singapore. https://doi.org/10.1007/978-981-10-1835-0

Emissions Gap Report. (2018). Retrieved from http://wedocs.unep.org/bitstream/handle/20.500.11822/26895/EGR2018_FullReport_EN.pdf

Energy use behaviour change. (n.d.). Retrieved from http://www.rczm.co.uk/post-5.html

Evans, W. D., Pattanayak, S. K., Young, S., Buszin, J., Rai, S., & Bihm, J. W. (2014). Social marketing of water and sanitation products: a systematic review of peer-reviewed literature. *Social Science & Medicine (1982)*, *110*, 18–25. https://doi.org/10.1016/j.socscimed.2014.03.011

Giorgi, S., Fell, D., Austin, A., & Wilkins, C. (2016). *Public Understanding of the Links between Climate Change and (i) Food and (ii) Energy Use (EV0402): Final report*. A report to the Department for Environment, Food and Rural Affairs. Brook Lyndhurst. Defra, London. Retrieved from http://randd.defra.gov.uk/Document.aspx?Document=13415_140703EV0402PublicUnderstandingofLinksMainReportFINALJan2016.pdf

Gordon, R., Butler, K., Cooper, P., Waitt, G., & Magee, C. (2018). Look before you LIEEP. *Journal of Social Marketing*, *8*(1), 99–119. https://doi.org/10.1108/JSOCM-04-2016-0017

Gordon, R., Dibb, S., Magee, C., Cooper, P., & Waitt, G. (2018). Empirically testing the concept of value-in-behavior and its relevance for social marketing. *Journal of Business Research*, *82*, 56–67. https://doi.org/10.1016/j.jbusres.2017.08.035

Grier, S., & Bryant, C. A. (2005). Social marketing in public health. *Annual Review of Public Health*, *26*, 319–339. https://doi.org/10.1146/annurev.publhealth.26.021304.144610

Gynther, L., Mikkonen, I., & Smits, A. (2012). Evaluation of European energy behavioural change programmes. *Energy Efficiency*, *5*(1), 67–82. https://doi.org/10.1007/s12053-011-9115-9

Hahn, R., & Metcalfe, R. (2016). The Impact of Behavioral Science Experiments on Energy Policy. *Economics of Energy & Environmental Policy*, *5*(2), 27–44. https://doi.org/10.5547/2160-5890.5.2.rhah

Household energy consumption. (2018). Retrieved from https://www.eea.europa.eu/airs/2018/resource-efficiency-and-low-carbon-economy/household-energy-consumption

Jonkhof, E., & van der Kooij, E. (Eds.). (n.d.). Towards the Amsterdam Circular Economy. Retrieved January 13, 2019, from https://assets.amsterdam.nl/publish/pages/580742/towards_the_amsterdam_circular_economy_web.pdf

Korsakienė, R., Tvaronavičienė, M., & Smaliukienė, R. (2014). Impact of Energy Prices on Industrial Sector Development and Export: Lithuania in the Context of Baltic States. *Procedia - Social and Behavioral Sciences*, *110*, 461–469. https://doi.org/10.1016/j.sbspro.2013.12.890

Kotler, P., & Lee, N. (2016). *Social marketing* (Fifth edit). Los Angeles: SAGE.

Lovelock, C. H., Patterson, P., & Wirtz, J. (2015). *Services marketing: An Asia-Pacific and Australian perspective* (6th editio). Frenchs Forest, N.S.W.: Pearson Australia.

McKenzie-Mohr, D. (2000). Fostering sustainable behavior through community-based social marketing. *The American Psychologist*, *55*(5), 531–537.

Menegaki, A. N. (2012). A social marketing mix for renewable energy in Europe based on consumer stated preference surveys. *Renewable*

Energy, *39*(1), 30–39. https://doi.org/10.1016/j.renene.2011.08.042

Metag, J., Füchslin, T., & Schäfer, M. S. (2017). Global warming's five Germanys: A typology of Germans' views on climate change and patterns of media use and information. *Public Understanding of Science*, *26*(4), 434–451. https://doi.org/10.1177/0963662515592558

Osborne, S. P. (2017). From public service-dominant logic to public service logic: Are public service organizations capable of co-production and value co-creation? *Public Management Review*, *20*(2), 225–231. https://doi.org/10.1080/14719037.2017.1350461

Peattie, K., & Peattie, S. (2009). Social marketing: A pathway to consumption reduction? *Journal of Business Research*, *62*(2), 260–268. https://doi.org/10.1016/j.jbusres.2008.01.033

Peattie, S., & Peattie, K. (2016a). Ready to Fly Solo? *Marketing Theory*, *3*(3), 365–385. https://doi.org/10.1177/147059310333006

Peattie, S., & Peattie, K. (2016b). Ready to Fly Solo? Reducing Social Marketing's Dependence on Commercial Marketing Theory. *Marketing Theory*, *3*(3), 365–385. https://doi.org/10.1177/147059310333006

Pothitou, M., Hanna, R. F., & Chalvatzis, K. J. (2016). Environmental knowledge, pro-environmental behaviour and energy savings in households: An empirical study. *Applied Energy*, *184*, 1217–1229. https://doi.org/10.1016/j.apenergy.2016.06.017

Ramirez, E., Tajdini, S., & David, M. E. (2017). The Effects of Proenvironmental Demarketing on Consumer Attitudes and Actual Consumption. *Journal of Marketing Theory and Practice*, *25*(3), 291–304. https://doi.org/10.1080/10696679.2017.1311219

Ramos, A., Gago, A., Labandeira, X., & Linares, P. (2015). The role of information for energy efficiency in the residential sector. *Energy Economics*, *52*, S17–S29. https://doi.org/10.1016/j.eneco.2015.08.022

Rangan, V. K., & Karim, S. (1991). *Focusing the Concept of Social Marketing*. Harvard Business Review.

Rentschler, J., & Bazilian, M. (2018). Principles for designing effective fossil fuel subsidy reforms. In *Fossil Fuel Subsidy Reforms* (Vol. 11, pp. 180–201). Routledge. https://doi.org/10.4324/9781351175821-8

Sarstedt, M., & Mooi, E. (Eds.). (2014). *A Concise Guide to Market Research*. *Springer Texts in Business and Economics* (2nd ed. 20). Berlin, Heidelberg: Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-53965-7

Smaliukiene, R., Chi-Shiun, L., & Sizovaite, I. (2014). Consumer Value Co-Creation in Online Business: the Case of Global Travel Services. *Journal of Business Economics and Management*, *16*(2), 325–339. https://doi.org/10.3846/16111699.2014.985251

Song, Q., Li, J., Duan, H., Yu, D., & Wang, Z. (2017). Towards to sustainable energy-efficient city: A case study of Macau. *Renewable and Sustainable Energy Reviews*, *75*, 504–514. https://doi.org/10.1016/j.rser.2016.11.018

Stead, M., & Hastings, G. (2018). Advertising in the Social Marketing Mix. Psychology Press. https://doi.org/10.4324/9781315805795-3

Strachan, P. A., Cowell, R., Ellis, G., Sherry-Brennan, F., & Toke, D. (2015). Promoting Community Renewable Energy in a Corporate Energy World. *Sustainable Development*, *23*(2), 96–109. https://doi.org/10.1002/sd.1576

Thøgersen, J. (2017). Housing-related lifestyle and energy saving: A multi-level approach. *Energy Policy*, *102*, 73–87. https://doi.org/10.1016/j.enpol.2016.12.015

Tvaronavičienė, M., Mentel, G., & Chyrva, H. (2018). Leadership in Energy Security: Behavioral Patterns and Long-Term Energy Intensity (pp. 591–601). https://doi.org/10.1007/978-3-319-74216-8_59

Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, *26*(3), 145–152. Retrieved from https://www.sciencedirect.com/science/article/pii/S026323730800042X

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THE IMPACT OF GLOBALIZATION ON REGIONAL DEVELOPMENT AND COMPETITIVENESS: CASES OF SELECTED REGIONS*

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Abstract. The objective of this study is to conduct an analysis of regional development and competitiveness in the EU and Latvia under current conditions of economic globalization. This paper makes an attempt to evaluate a theory of regional development and regional competitiveness concept in relation to regional competitiveness in the light of current global economic changes. The authors emphasise that the regional development is based on competitive advantages, which has been a subject of fundamental research by Michal Porter and that serves as a basis for the current scientific methodology to assess competitiveness of regions and countries. The authors support a view of many scholars to consider regional competitiveness as the capacity of a region (or country) to create and support competitive economic environment. Further research reveals the impact of globalization on regional development by analysing interaction between the Globalization Index (GI) and the Global Competitiveness Index (GCI). Quantitative and qualitative analysis, i.e. literature analysis, comparative analysis and correlation analysis performed for this study reflect that competitiveness under global economic conditions is determined by the development stage of each region – competitiveness of a less developed region is more dependent on production factors, while competitiveness of a higher developed region is based on innovation. The correlation analysis reveals that the impact of globalization is stronger for those EU countries, which are in the efficiency-driven stage of development thank for those, which are in the innovation-driven stage. The results of this research could be useful for economic policy makers to determine the role of institutions, policy

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instruments and factors, which are necessary for attaining higher productivity, efficiency and profitability better withstand forces of competition on global and regional markets.

Keywords: regional development; competitiveness; globalisation; impact; the EU, Latvia

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JEL Classifications: R10, R11

1. Introduction

The concept of regional economy was developing parallel to evolvement of the regional development theory, which led to acknowledging the importance of cities and regions or territories. In the light of a debt crisis of late 1980ies and early 1990ies, as well as increasing globalization, the success factors behind achieving the economic development became even more significant and led to applying new approaches for attracting resources necessary for the development, such as turning regional comparative advantages into competitive advantages resulting in a new development stage of a territory – competitiveness.

Therefore, this paper is focusing on the analysis of competitiveness of state (territory), not business or market competitiveness. For analysing the factors of competitiveness this paper evaluates main sources of competitiveness according to M. Porter's Diamond Model, two the most important competitiveness researches – World Competitiveness Yearbook and Global Competitiveness Report. The global competitiveness ratings based of the Global Competitiveness Report (2015) and globalisation index ratings based on the KOF Globalization Index (2015) have been considered as an empirical basis to measure the impact of globalization on regional competitiveness and used for the quantitative analysis of this research.

In the framework globalization is viewed according to Amit K. Bhandari and Almas Heshmati (2005), who argue that the elements of globalization include free movement of goods and services, flow of capital, movement of labor and the transfer of technology which has brought the developed economies closer together and made them more strongly integrated. Although economic interconnectedness is the prime mover of globalization, the conflicting behaviour of environment, culture, political and social development antecedes contemporary development process. Apart from that globalization also indicates the flow of ideas, norms, informations and peoples.

According to the KOF Globalization Index the world's globalization has been contactly increasing since 1970ies and its growth trends have particularly increased after 1990ies (Please, see Figure 1). The globalization and its expansion have determined that today's regional stakeholders are forced to be competitive not only on a regional, but also on a global scale.

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

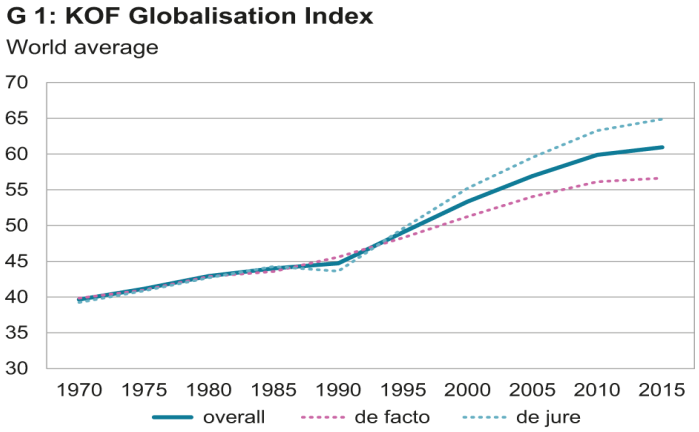

Figure 1. KOF Globalisation Index 1970 – 2015

Source: https://www.kof.ethz.ch/en/news-and-events/media/press-releases/2018/01/kof-globalisation-index-globalisation-down-worldwide-in-2015.html

The research results reveal that the impact of globalization on the regional development depends on the development stage of the region in question. The competitiveness, which is based on productivity, efficiency and profitability presents capacity of a state or a region to produce export goods and services under of a market economy conditions, which successfully compete on the international market and is able to develop further during the transition to the next development stage. Those regions, which are on a higher development stage of innovation are also more competitive globally and can easier withstand forces of globalization.

2. Concepts of Regional Economy and Development

Until the second half of 20th century the dominating was economic development concept described by such prominent economists as Adam Smith (Smith A, 1776), David Ricardo (Ricardo D, 1817), John Stuart Mill (Mill J.S, 1859) and others. This economic development concept noted that the success of state and its socioeconomic model is based on high economic growth rates and productivity, as well as greater GDP and GDP per capita. This concept was used to explain the development of any territory. During 1940ies with evolving of the development economics, which were mainly focusing on accumulation of material wealth of countries, the leading theory was based on the Kein's macroeconomic model. The main shortage of the Kein's theory is the emphasis on money and material capital, however, doesn't recognize the importance of a human capital. This was considered that the economic growth automatically leads to the development of territories and their inhabitants, and that increase in the industrial production helps to reduce poverty and increases the overall wealth of people. The relationship between increase in production and reduction of poverty was considered so significant that the economic growth became the target indicator for development and was used as a basis for conducting economic policy.

Main principles of a modern regional development theory are based on aspects of the Shumpeter's regional development theory. However, it has developed over time and become much more complex requiring more integrated analytical approach. Evolving of the regional development theory was impacted by endogenous factors or the endogenous growth theory also called the New Growth Theory, which in addition to development factors of neoclassical economic theory – capital and labour, adds the third factor – knowledge. According to this theory the economic development results from investing in knowledge, which determined technological development possibilities of each region that correspond to particular environment, human resources and their use, as well as results achieved by new ideas, technologies and efficient management of resources (Audretsch D, Dohse D,

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

2007). This theory also recognizes the importance of external support for SMEs development, as well as stimulation of investment and development for promoting the growth of a country or a region.

Parallel to the regional development theory, also the regional economy concept was developed. Its advancement started during 1950ies in the U.S. and obtained a status of study discipline during 1990ies. The regional economy is a discipline, which focuses on objective preconditions for the regional economic development, production structures, social sphere and living conditions, economic management and its mechanisms, etc. (geographic location, natural resources, demography, potential for industrial production), as well as economic relations with other regions and countries. Regional economy is a sub-discipline of the regional science, which focuses on those economic aspects, which are related to territorial space and it is a territorial development economy by its nature (Экономическая библиотека, 2011).

During 1980ies and in the beginning of 1990ies the global debt crisis shifted the emphasis from the United Nations (UN) to the Bretonwood's institutions, such as the World Bank and the International Monetary Fund, which had "one approach for all" policy. This changed previous development priorities to qualitatively new approaches: reduction of state debt and expenditure, stopping economic recession, etc. In result, the UN's first annual Human Development Report (Mahbub ul Haq, 1991) became a starting point for recognizing a new branch of the science of economy - the development economy.

The success of a local economy or regional development is determined by the system of socio economic and cultural components: capacity of entrepreneurship; local production factors (capital and labour); mutual relations between local actors, which facilitate the absorption of cumulative knowledge; ability to take decisions, which permit local social and economic actors to lead development processes, provide support for their transformation and innovation, as well as enrich them with external information and knowledge, which is necessary to relate the development process to the overall development process and global economic, social, technological and cultural transformation (Capello, R., Caragliu, A., Nijkamp, P., 2009; Pietrzak, MB., Balcerzak, AP.; Gajdos,, A., Arendt, Ł, 2017; Sagiyeva, R,, Zhuparova, A., Ruzanov, R., Doszhan, R., Askerov, A., 2018; Lavrinenko, O. Ignatjeva, S. Ohotina, A. Rybalkin, O. Lazdans, D., 2019).

The European Union (EU) policy and planning documentation started to focus more on the role of cities and regions for territorial cooperation and differences around 2004 – 2005 (Commision of the European Communities, 2007), when the role of cities as main engines for the regional development, which should attract inhabitants and tourists under conditions of globalizations became more evident. This placed even more emphasis on such qualitative features of territories as cultural life, access to communal services and efficient institutions (Commision of the European Communities, 2005). Therefore, the impact of such non-economic factors as quality of live and attractiveness of environment became recognized as important territorial advantages. The sixth Progress Report of the EU on the Economic and Social Cohesion (Commision of the European Communities, 2009) includes theory of the researcher R. Florida, which defines three main factors for the economic and regional development, so called 3Ts – Technology, Talent and Tolerance (Florida R, 2011). According to R. Florida, if enterprise or city or region or territory has 3Ts then they are able to attract creative labour force, which can create innovation and promote economic development.

3. Regional Competitiveness and Competitive Advantages

The science of economy puts an emphasis on the analysis of factors, which facilitate the economic development, competitiveness and attractiveness of a territory. One of important territorial development factors is advantage of one territory against another, which helps to attract resources for the development. When a territory increases its attractiveness then comparative advantages turn into competitive advantages leading to a new development stage of a territory – competitiveness. The achievement of the competitiveness stage helps to ensure further efficient

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

and profitable use of attracted competitive resources, which ensures economic efficiency and improvement of economic indicators.

There are several differences between territorial competitiveness and advantages: the competitiveness is related to efficient and optimal use of resources, while the attractiveness means the ability to attract, keep and sustain resources on a particular territory. The competitiveness is more oriented to acknowledgement of development perspectives, while the advantages are focused on efficient and open business perspectives (Pellegrini G, 2006). The main difference between competitiveness and advantage is hidden in the level of active participation of the government in economy. The factors of attractiveness are based on the level of government support and they are almost fully under the influence and control of the government. At the same time, the factors of competitiveness are outside of the direct government influence (Serrano A, 2003).

Historically, the concept of competitiveness is related to the concept of competition, which developed during the era of capitalism. If the competition is a special type of economic environment, then the competitiveness is an ability of an economic subject to survive in this environment. Since 1980ies the competitiveness theory has become a new sub-sector of the theory of economy, which researches factors influencing the competitiveness of states and regions and is especially useful for analysing new economic globalization processes (Garelli S, 2002).

The World Economic Forum in its Global Competitiveness Report (GCR) defines the competitiveness as a combination of institutions, policies and factors, which determine productivity level of a territory. In addition, the productivity level determines the level of welfare, which can be achieved by an economy. Also, the productivity level determines the impact of a return of resources invested in the economy; and is the main engine for its development. Clearly, the economy, which achieves faster growth is more competitive. Therefore, the concept of competitiveness includes dynamic and static components: despite a fact that the productivity of a state determines its ability to sustain high source of income, the competitiveness is one of the most important factors for receiving profit from investment, which is one on the main indicators of the economic development (Schwab K, 2012). The GCR was first launched in 1980. In 2017 the GCR has analysed competitiveness of 137 world's countries.

The World Competitiveness Centre in its World Competitiveness Yearbook (WCY) of the International Institute for Management Development defines the competitiveness concept as an area of economic knowledge, which analyses facts and policies behind the ability of state to create and sustain the environment, which promotes the creation of higher value added for its enterprises and higher welfare level for its inhabitants. In other words, the competitiveness is how the nation manages its own and attracted resources to improve the welfare of its people (Garelli S, 2012). The WCY is being published since 1989 and in 2017 it included 63 countries, as well as for the first time – several regions, which were analysed on the same level as countries.

This is important to mention that on the European level (EU27) the EU Regional Competitiveness Index (RCI) has been built according to approach of the Global Competitiveness Index (WEF). This is the first composite indicator which measures territorial competitiveness of 27 EU Member States on NUTS 2 level. The RCI consists of eleven pillars grouped in three groups: 1) Basic, 2) Efficiency and 3) Innovation, which measure issues relevant to firms, as well as to residents of the regions and their quality of life. The Basic group includes five pillars: Institutions; Macroeconomic Stability; Infrastructure; Health; and Basic Education. The Efficiency group includes three pillars: Higher Education, Training and Lifelong Learning; Labour Market Efficiency; and Market Size. And the Innovation group consists of three pillars: Technological Readiness; Business Sophistication; and Innovation (European Commission, 2017).

The first edition of the RCI was published in 2011 followed by 2013 and 2016 editions. The 2016 RCI is based on 74 mostly regional indicators covering the 2012-2014 period, but with a number of indicators also from 2015 and 2016. The RCI definition of the competitiveness is quite simple: Regional competitiveness is the ability of a

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

region to offer an attractive and sustainable environment for firms and residents to live and work (European Commission, 2017). Therefore, the RCI is quite unique policy tool for monitoring and assessing the regional competitiveness in the EU. However, approaches used by the GCR and WCY are more useful, when looking on the impacts of globalization on regional economies.

The KOF Swiss Economic Institute Globalization Index (GI) measures the economic, social and political dimensions of globalisation. The GI is used in order to monitor changes in the level of globalisation of different countries over extended periods of time. The KOF Globalisation Index in for 2015 was available for 185 countries. The Index measures globalisation on a scale of 1 to 100. The methodology of calculating the KOF GI has changed over time. For example, instead of the previous 23 different variables, a total of 42 were included in calculating the GI for 2015. According to the literature review the KOF GI is the one of the first of its kind and unigue in terms of providing insight into globalization research.

The World Competitiveness Yearbook analyses several types of economic competitiveness by calculating various indexes: Global Competitiveness Index, GlCI; Growth Competitiveness Index, GCI; Business Competitiveness Index, BCI, Digital Competitiveness Ranking (since 2017). Therefore, a structure of the regional competitiveness can be quite easily determined, however, it is constantly changing, especially with the development of modern technologies. At the same time, this is quite difficult to evaluate operationalisation of the competitiveness factors. The scientific literature identifies different factors of regional competitiveness and there are also various classifications of those factors. Therefore, this is important to evaluate existing competitiveness ratings. According to Professor Michael Porter there are four main determinants, which serve as a basis of regional competitive advantages or environment, which is created and sustained by each region (Porter M, 1990):

- *Production factors* – determine the position of the region in relation to such production factors as qualified labour force and infrastructure, which is necessary to stand against forces of competition in a particular sector;
- *Demand factors* of regional market are related to products and services of a particular sector;
- *Related and supportive industries* – competitive sectors (enterprises) on a global market and presence of suppliers or related industries in the region;
- *Strategy, structure and competition* – regional conditions for the emergence of stakeholders, stakeholders' organizations and management, as well as internal competition.

The above mentioned factors determine the creation of a business environment for regional stakeholders. Each of these determinants is typical for a particular region and their combination provides important preconditions for global competitiveness of regional enterprises. The competitiveness and competitive advantages are important concepts for the economic development and growth, because they are firmly tied with the strategies and management of cities and regions (territories) for improving their inhabitants' welfare (Anderson R, 1999).

4. Forces and factors behind regional economic development and competitiveness

The economic globalization forces regional stakeholders to be competitive not only on a regional, but also on a global scale. This is the main condition of the globalization process, which impacts regional competitiveness and also influences economic thought and theory. Every region must be as competitive as possible to promote international competitiveness of its stakeholders and encourage their activity in a particular region or/and on a global market place. Professor Michael Porter was the first, who created the system of factors influencing the regional competitiveness, which is called the Diamond Model. The Diamond Model identifies the four forces of competitiveness based on the above mentioned four determinants: 1) Production factor (volume, quality and specialization of production factors); 2) Demand factor (experienced and demanding local consumer; requirements of consumers; untypical local demand in specific segments); 3) Structure and competition (local

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

situation, which support investment and continuous development; strong competition between local enterprises); 4) Related and supporting industries (presence of competitive local suppliers and competitive local industries).

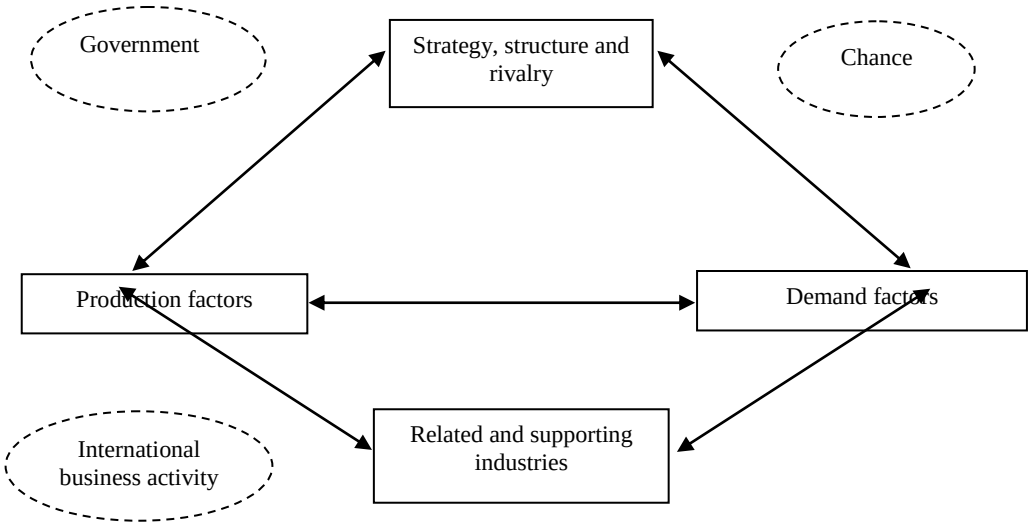

Figure 2. M. Porter's Diamond Model – regional competitiveness sources

Source: Hernesniemi H., Lammi M., Yla-Anttila P., 1996. *Advantage Finland – The Future of Finnish Industries*: ETLA [the Research Institute of the Finnish Economy] report of the Finnish clusters' study. Helsinki: Taloustieto Oy.

The Figure 2 shows the classical Diamond Model of Michael Porter (Porter M.E, 1998) amended with three newly added components important for the creation of a favourable business environment. These three new features were added by the Finnish researchers in their fundamental industrial research *„Advantage Finland – The Future of Finnish Industries"* (Hernesniemi H., Lammi M., Yla-Anttila P, 1996) and include: 1) Government; 2) Chance; and 3) International business activity.

The government has an important role in several aspects, such as: 1) providing guaranty for sufficient supply of resources, which are necessary for the development, especially, factors for creating advantages; 2) creating basis for the economic development and innovation – measures for protecting environment, safety standards etc.; 3) ensuring functioning of the market system; and 4) stimulating the development of human capital.

The factor of chance has an important role in many industrial undertakings. For example, the Finnish researchers describe a case, where Mr. *Lauri Rapala* in 1936 established an enterprise for producing fishing equipment, which was rapidly expanding. However, the biggest success of this enterprise came by a chance, when Mr. Rapala appeared in the same "Life" magazine edition of 1962, which wrote about the death of Merilin Monroe. It was the most popular volume of the "Life" journal ever and it also helped to increase the image and popularity of Mr. *Lauri Rapala* and his business.

The International business activity was added to the Diamond model later in a result of discussion with J. Dunning (Dunning J, 1993). According to M. Porter's views multinational economic subjects are external elements with respect to the Diamond Model. He also considers that global economic subjects aren't meaningful in the presence of already established competitive advantages, because, there are such global economic subjects with their own corporative culture, which doesn't influence separate nations.

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

The stage of development of regions should be taken into account, when conducting the analysis of competitiveness and applying the Diamond Model. There are different factors influencing regional competitiveness in different stages of the development – each characterised by different forces. This aspect has been deeply researched by the GCR, which separate all regions under five categories corresponding to the three main development stages and two transition period stages.

The WEF has chosen the GDP per capita for the criteria for dividing regions into stages of economic development by defining precise limits of this indicator for each of the stages (Sala-i-Martin X. & al, 2016) (Please, see Table 1).

Table 1. Development stages of regions and their forces, USD

No.	Regional development stages	Main forces	GDP per capita
1.	Factor-driven-stage	Intensive use of production factors	>2000 USD
2.	Transition stage from factor to efficiency driven stage		2000-2999 USD
3.	Efficiency-driven-stage	Productivity of resources used in the economic activity	3000-8999 USD
4.	Transition from efficiency to innovation driven stage		9000-17000 USD
5.	Innovation-driven-stage	Innovation	<1700 USD

Source: authors' calculations according to Schwab K. (Ed.) (2014) The Global Competitiveness Report 2014–2015. Geneva: World Economic Forum; Schwab K. (Ed.) (2015) The Global Competitiveness Report 2015–2016. Geneva: World Economic Forum; Schwab K. (Ed.) (2016) The Global Competitiveness Report 2016–2017. Geneva: World Economic Forum.

Choice of the GDP per capita as the main criteria for dividing regions in the development stages is based on the assumption that production factors are determined by prices. The lowest prices are related to the lowest level of income and, therefore, the regions, where the GDP per capita is lower than USD 2000 belong to the first – Factor driven stage. The same reasoning is behind dividing regions, which are in the Transition from production to efficiency driven stage from regions in the Efficiency driven stage: the GDP per capita increases, because of increase in productivity and salary, which rises simultaneously with the region moving to the highest development stage, which requires to increase the productivity by applying much more complicated factors (Lopez-Claros A., Blanke J., Drzeniek M., Mia I., Zahidi S, 2006). As reflected in Table 2 the lowest numbers of the Global competitiveness indice average ranking correspond to the highest position of a country in the competitiveness rating.

Table 2. Average rank of the Global competitiveness index of countries in different stages of development

Regional development stages	Global competitiveness indice average ranking		
	2014	2015	2016
Factor-driven-stage	91	97	102
Transition stage from factor to efficiency driven stage	72	72	68
Efficiency-driven-stage	53	59	66
Transition from efficiency to innovation driven stage	35	35	44
Innovation-driven-stage	19	20	21

Source: authors' calculations according to Schwab K. (Ed.) (2014) The Global Competitiveness Report 2014–2015. Geneva: World Economic Forum; Schwab K. (Ed.) (2015) The Global Competitiveness Report 2015–2016. Geneva: World Economic Forum; Schwab K. (Ed.) (2016) The Global Competitiveness Report 2016–2017. Geneva: World Economic Forum.

Components of sub-indexes of the GCI are determined according to the above mentioned regional classification methodology and correspond to the three forces (production, efficiency, innovation), which determine the three

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

aforementioned main stages of the regional competitiveness (Schwab K, 2015): 1) sub-index measuring basic factors (institutions; infrastructure; macroeconomic environment; health care and basic education); 2) sub-index measuring efficiency (higher education and training; goods market efficiency; labour market efficiency; development of financial market; technological readiness; market size); 3) sub-index measuring innovation and specialised factors (business attractiveness; innovation).

Latvia according to the GCI 2017-2018 ranks 54th among 137 world's countries, but in GCI 2016-2017 – 49th among 138 world's countries, which means that according to Tables 1 and 2 Latvia with it's GDP of EUR 1154.33 or USD 1428.83 (Exchange rate set by the European Central Bank = 1.237800) is in the Transition from production to efficiency driven stage. According to the GCR 2017-2018 the main drawbacks for Latvia are related to market size, institutions, infrastructure, innovation and business sophistication. Clearly, nothing much can be done about the market size since Latvia is a small country. However, other factors can be improved through applying right policy instruments. For example, innovation pillar ranking 83rd among 137 countries includes following factors: Capacity for innovation ranking 57th among 137 countries; Quality of scientific research institutions ranking 51st among 137 countries; Company spending on R&D ranking 73rd among 137 countries; University-industry cooperation on R&D ranking 100th among 137 countries; Government procurement of advanced technology products ranking 119th among 137 countries; Availability of scientists and engineers ranking 109th among 137 countries; PCT patents ranking 35th among 137 countries. Moreover, the GCR names the most problematic factors for doing business in Latvia based on the opinion of executives, where the main three are: 1) Inefficient government bureaucracy; 2) Tax rates; 3) Tax regulations (Schwab K., 2017). Therefore, the GCR clearly identifies which areas are the most problematic ones and should be targeted first.

Components of the GCI are related to the regional development stages determining the weight of each sub-index depending on the regional competitiveness stage. Besides, when calculating the GCI value, each sub-index is determined according to the competitiveness stage of a particular region. A percentage of the main competitiveness factors – i.e. components of the GCI related to the main development stages of regions are shown in Table 3.

Table 3. The significance of main competitiveness factors according to development stages, %

Regional development stages	**Main competitiveness factors**		
	Basic factors	**Promoters of efficiency**	**Inovation and specialization factors**
Factor-driven-stage	60	35	5
Transition stage from factor to efficiency driven stage	40-60	35-50	5-10
Efficiency-driven-stage	40	50	10
Transition from efficiency to innovation driven stage	20-40	50	10-30
Innovation-driven-stage	20	50	30

Source: Sala-i-Martín X., Baller S., Crotti R., Di Battista A., Drzeniek Hanouz M., Geiger T., Gómez Gaviria D., Marti G. (2016) Competitiveness agendas to reignite growth: Findings from the Global Competitiveness Index. In: Schwab K. (Ed.) The Global Competitiveness Report 2016–2017. Geneva: World Economic Forum, pp. 3-50.

Table 3 shows that the most important for increasing competitiveness of regions, which are on the lowest – Production stage are basic factors (60%) followed by factors for efficiency promotion (35%) and only 5% are allocated for innovation and specialized factors. At the same time, for regions, which are on the innovation stage the basic factors (20%) and factors for efficiency promotion (50%) are still quite significant, while the significance of innovation and specialization factors is much higher – 30%, meaning that in the highest stage of competitiveness the innovation and specialized factors have the biggest impact on the regional competitiveness.

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

Countries or regions, which are in the Transition process have different composition of competitiveness factors depending on those, which have become more important for the development.

5. The impact of globalization on regional devlopment and competitiveness

For measuring the impact of globalization on regional development and competitiveness the Correlation between Globalization Index (GI) and Clobal Competitiveness Index (GCI) has been performed using the sample of 132 world countries. The calculation of the Srearman's rank correlation coefficient reveals that there is statistically significant (p=0,000) strong positive (r=+0,808) 2-tailed correlation between GI and GCI within the whole sample of 132 world's countries (see Table 4). It means that countries with a higher level of globalization are more competitive and countries with higher level of competitiveness appear to be more globalized.

Table 4. Correlation between ranks of GI and GCI, Spearman's correlation coefficient, n-132 countries, 2015

Correlations

			gi_rank	gci_rank
Spearman's rho	gi_rank	Correlation Coefficient	1,000	,808**
		Sig. (2-tailed)	.	,000
		N	132	132
	gci_rank	Correlation Coefficient	,808**	1,000
		Sig. (2-tailed)	,000	.
		N	132	132

**. Correlation is significant at the 0.01 level (2-tailed).

Source: authors' own calculations using GI and GCI data

The correlation analysis between Globalization Index (GI) and Global Competitiveness Index (GCI) performed for different stages of development shows that the level of development of a country influences the correlation results.

While there are not any statistically significant results of correlation between globalization and competitiveness on transition stages of development, the three main stages of development: factor-drive; efficiency-driven and innovation-driven, have statistically significant correlation results. The efficiency-driven stage of development has the highest indicator of the GI and GCI correlation. (see Table 5). A considerable mathematical difference between general r (see Table 4) and r on the stages of development (see Table 5) could be explained with the fact that general correlation analysis was done within a larger sample (n=132), while for a smaller sample (for development stage analysis) requirements for correlation coefficient were higher, because of a smaller number of a sample's units (countries).

Nevertheless, the highest correlation results for the efficiency-driven stage can be explained with the fact that globalization is more important for the competitiveness of a country on the efficiency-driven stage of development, which is a bases for futher increase in productivity.

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(3)

Table 5. Correlation between ranks of GI and GCI on different stages of development of countries, Spearman's correlation coefficient, n-132, 2015

Stage of development of countries	Spearman's correlation coefficient, r	Statistical significance*, p	Number of countries
Factor-driven stage	**+0,379**	0,036	31
Transition from factor-driven to efficiency-driven stage	+0,411	0,128	15
Efficiency-driven stage	**+0,444**	0,011	32
Transition from efficiency-driven stage to innovation-driven stage	+0,206	0,428	17
Innovation-driven stage	**+0,385**	0,019	37

* Correlation is statistically significance if p<0,05

Source: authors' own calculations using GI and GCI data

For the purpose of evaluating the refional competitiveness, this is useful to look on the correlation analysis results for EU and non-EU countries. The correlation results show that close interaction between globalization and competitiveness is more likely for non-EU countries, because their sample shows higher Spearman's correlation coefficient between GI and GCI (see Table 6).

Table 6. Correlation between ranks of GI and GCI taking into consideration countries' membership in the EU, Spearman's correlation coefficient, n-132 countries, 2015

Membership of a country in the EU	Spearman's correlation coefficient, r	Statistical significance,* p	Number of countries
EU country	**+0,716**	0,000	28
Non-EU country	**+0,767**	0,000	104

* Correlation is statistically significance if p<0,05

Source: authors' own calculations using GI and GCI data

At the same time, results of partial correlation (based on the stage of development) between GI and GCI for EU and non-EU countries show that mutual intearction between globalization and competitiveness is more likely for EU countries (partial r=+0,567) than for non-EU countries (partial r=+0,487). (see Table 7)

Table 7. Partial correlation* between ranks of GI and GCI taking into consideration countries' membership in the EU, Spearman's correlation coefficient, n-132 countries, 2015

Membership of a country in the EU	Spearman's correlation coefficient, r	Statistical significance,** p	Number of countries
EU country	**+0,567**	0,000	26
Non-EU country	**+0,487**	0,000	100

* Controlled variable – stage of development of a country
** Correlation is statistically significance if p<0,05

Source: authors' own calculations using GI and GCI data

On overall the results of correlation analysis indicated that the globalization level of a country and its competitiveness has strong positive statistically significant correlation, which is stronger for EU countries and countries on the efficiency-driven stage of development. It means that competitiveness under global economic

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2019 Volume 1 Number 1 (March)
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conditions is determined by the development stage of each region – competitiveness of a less developed region is more dependent on production factors, while competitiveness of a higher developed region is based on innovation.

Conclusions

The analysis of competitiveness concept leads to a conclusion that the competitiveness is a combination of institutions, policies and factors, which determine the productivity level of a territory, and are crucial for its economic development. The competitiveness involves a combination of elements of productivity, efficiency and profitability; the ability of a state (territory) to produce goods and services for export, successfully compete with other states (territories) in international markets, which promotes territorial growth and transition to the next stage of development; and the ability of state to manage, create and sustain a favourable environment for its people and enterprises, where people can improve their welfare and enterprises – increase their added value.

The impact of globalization on regional development depends on the development stage of a region in question – regions, which are on the lower development stage and more dependent on the production factors are less competitive on a global scale, thus, the impact of globalization for them is greater. In turn, innovative regions, which are on a higher development stage are also more competitive globally and can easier withstand forces of globalization.

The regional competitiveness in the Factor driven stage is mainly based on so called basic factors – institutions; infrastructure; macroeconomic environment; health care and basic education. The regional competitiveness in the Efficiency driven stage is mainly based on the factors promoting efficiency – higher education and training; goods market efficiency; labour market efficiency; development of financial market; technological readiness; market size. Finally, the regional competitiveness in the Innovation driven stage is mainly based on the factors promoting innovation and specialised factors – business attractiveness; innovation.

Countries with higher level of globalization are more competitive and countries with higher level of competitiveness appear to be more globalized. The competitiveness under global economic conditions is determined by the development stage of each region – competitiveness of a less developed region is more dependent on production factors, while competitiveness of a higher developed region is based on innovation.
Taking into account various factors, which influence regions in a particular stage of development this is important for policy makers to decide, which policy instruments could be more efficient for increasing the regional competitiveness and, thus, also the level of development making them more competitive and less dependent on the impact of globalization.

References

Anderson, R. 1999. *Attractive Cities.* Stockholm: The Swedish council for building research.

Audretsch, D., Dohse, D. 2007. Location: A Neglected Determinant of Firm Growth. *Review of World Economics*, 143(1), 79-107.

Bhandari, A.K., Heshmati, A. 2005. Measurment of Globalization and Its Variations Among Countries, Regions and Over Time, Discussion Paper No.1578, the Institute for the Study of Labour (IZA) Discussion Series, April 2005, Bonn, Germany, p.4.

Capello, R., Caragliu, A., Nijkamp, P. 2009. Territorial Capital and Regional Growth: Increasing Returns in Cognitive Knowledge Use. *Discussion Papers*, No. 09-059/3. Tinbergen Institute.

Commision of the European Communities. 2005. *Cities and the Lisbon Agenda: Assessing the Performance of Cities.* Brussels: Directorate General Regional Policy. http://www.urbanaudit.org/Cities%20and%20the%20lisbon%20agenda.pdf

Commision of the European Communities. 2007. *Growing Regions, Growing Europe. Fourth Report on Economic and Social Cohesion.* Luxembourg: Office for Official Publications of the European Communities. http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion4/pdf/4cr_en.pdf

Commision of the European Communities. 2009. *The Sixth Progress Report on Economic and Social Cohesion.* Brussels: Commission of the European Communities. http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/interim6/com_2009_295_en.pdf

Dunning J. 1993. Internationalizing Porter's diamond. *Management International Review:* special issue, 33(2), 47-62.

European Commission. 2017. The EU Regional Competitiveness Index 2016, Working Paper, Ed: Paola Annoni, Lewis Dijkstra, Nadia Gargano, 02/2017, Brussels.

European Commission. 2017. The EU Regional Competitiveness Index 2016, Working Paper, Ed: Paola Annoni, Lewis Dijkstra, Nadia Gargano, 02/2017, Brussels

European Commission. European Regional Competitiveness Index:
http://ec.europa.eu/regional_policy/en/information/maps/regional_competitiveness/

Florida, R. 2011. The Great Reset: How the Post-Crash Economy Will Change the Way We Live and Work. HarperBusiness, 2011. p. 240.

Garelli, S. 2002. *Competitiveness of Nations: The Fundamentals.*
http://members.shaw.ca/compilerpress1/Anno%20Garelli%20CN%20Fundamentals.htm

Garelli, S. 2012. *IMD World Competitiveness Yearbook 2012.* Lausanne: IMD World Competitiveness Center.

Hernesniemi H., Lammi M., Yla-Anttila P. 1996. *Advantage Finland – The Future of Finnish Industries*: ETLA [the Research Institute of the Finnish Economy] report of the Finnish clusters' study. Helsinki: Taloustieto Oy.

IMD World Competitiveness Online: https://worldcompetitiveness.imd.org/

KOF Swiss Economic Institute: https://www.kof.ethz.ch/en/news-and-events/media/press-releases/2018/01/kof-globalisation-index-globalisation-down-worldwide-in-2015.html

Lavrinenko, O., Ignatjeva, S., Ohotina, A., Rybalkin, O., Lazdans, D. 2019. The Role of Green Economy in Sustainable Development (Case Study: The EU States), *Entrepreneurship and Sustainability Issues* 6(3): 1013-1026. http://doi.org/10.9770/jesi.2019.6.3(4)

Lopez-Claros, A., Blanke, J., Drzeniek, M., Mia, I., Zahidi, S. 2006. Policies and institutions underpinning economic growth: Results from the competitiveness indexes. **In:** Lopez-Claros A. (Ed.) *Global Competitiveness Report 2005-2006.* Geneva: World Economic Forum, pp.16-34.

Mahbub ul Haq. 1991. *Human Development Report 1991*. United Nation Development Programme. New York: Oxford University Press. http://hdrnet.org/423/1/hdr_1991_en.pdf

Mill, J. S. 1859. *On Liberty.* Editor Gertrude Himmelfarb. UK: Penguin, 1985.

Pellegrini, G. 2006. Measures of competitiveness and attractiveness: a critical appraisal focused on Italy, *Proceedings of the Scientific Meeting of the Italian Statistical Society, vol. 1,* pp. 355-364. http://www.sis-statistica.it/files/pdf/atti/sessione%20plenarie%202006_355-364.pdf

Pietrzak, M.B., Balcerzak, A. P., Gajdos, A., Arendt, Ł 2017. Entrepreneurial environment at regional level: the case of Polish path towards sustainable socio-economic development, *Entrepreneurship and Sustainability Issues* 5(2): 190-203. http://doi.org/10.9770/jesi.2017.5.2(2)

Porter M.E. 1998. *On Competition*. USA: Boston. 220.lpp.

Porter, M.E. 1990, *The Competitive Advantage of Nations.* New York: The Free Press.

Ricardo, D. 1817. *On the Principles of Political Economy, and Taxation.* 1st edition. Harmondsworth: Penguin reprint, 1971 (Hartwell, R. M. editor)

Sagiyeva, R,, Zhuparova, A., Ruzanov, R., Doszhan, R., Askerov, A. 2018. Intellectual input of development by knowledge-based economy: problems of measuring in countries with developing markets, *Entrepreneurship and Sustainability Issues* 6(2): 711-728. http://doi.org/10.9770/jesi.2018.6.2(17)

Sala-i-Martin X., Baller S., Crotti R., Di Battista A., Drzeniek Hanouz M., Geiger T., Gomez Gaviria D., Marti G. 2016. Competitiveness Agendas to Reignite Growth: Findings from the Global Competitive Index. In: Schwab K. (Ed.) *The Global Competitiveness Report 2016-2017*. Geneva: World Economic Forum, pp. 3-50.

Schwab K. 2017. *The Global Competitiveness Report 2017-2018*. Schwab, K (ed.), Geneva: World Economic Forum, p.41, 176-177, 320, 326

Schwab, K. 2015. *The Global Competitiveness Report 2014-2015*. Schwab, K (ed.), Geneva: World Economic Forum: p.4.

Schwab, K. 2016. *The Global Competitiveness Report 2015-2016*. Schwab, K (ed.), Geneva: World Economic Forum.

Serrano, A. 2003. *City competitiveness and attractiveness: a new approach to evaluate economic development in Mexican cities.* PhD Thesis, Department of Urban Studies, University of Glasgow.

Smith, A. 1776. Glasgow Edition of the Works and Correspondence Vol. 2a. *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Vol. 1. http://files.libertyfund.org/files/220/0141-02_Bk.pdf

The World Economic Forum: https://www.weforum.org/

Экономическая библиотека [Econmics library]. 2011. *Предмет и объект региональной экономики*. http://ecolibrary.ru/1561

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THE CLASSIFICATION AND COMPARISON OF BUSINESS RATIOS ANALYSIS METHODS*

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Abstract. There are many business ratios analysis methods, which are used for different purposes, and the task of these methods classification remains actual business administration problem at present time. In this paper, we suggest two-dimensional classification for business ratios analysis methods**.** The first dimension is related to the goal of analysis – who and what for performs the business ratios analysis. Usually different real or possible participants of business process perform business ratios analysis for decision-making. There are four main real participants of the business process – owners, workers, managers, society, and two potential participants – creditors and investors. Interests of all participants of the business process are different and therefore the purposes of business ratios analysis can be different. The difference in purposes entails the difference of methods of business ratios analysis, but the common question for all participants of business processes is the question about how their interests are satisfied. The second suggested dimension for business ratios analysis methods classification is the depth of analysis and four levels of analysis are suggested here. The first level is the level of operations and such ratios as earnings (EBITDA, EBIT, EBT, EAT, RE), returns (ROI, ROA, ROE), assets (FA, CA, OF, LTL, CL, TA) are considered at this level. The second level is the financial leverage level and such ratios as Debt/Equity, Interest, Tax, ROE are considered at this level. The third level is the stock market level and such ratios as NPV, EVA, NOPAT, WACC are considered here. The fourth level of business ratios analysis is the functional level or the level of structural units. Independently on the interests of participants of business process, a company should perform such business functions as the creation of organizational structure, financial, human and material resources management, main business activity organization, marketing and others. Usually, special structural units are created in the company to perform most significant business functions, and the quantitative evaluation of business functions performance needs to consider business ratios, which describing appropriate units. Therefore, there are many business ratios analysis methods. The classification and comparison of them give the possibility to take into account, compare the interests of all participants of the business process, and find more qualitative business solutions. Paper considers the classification of business ratios analysis methods and compares them to work out recommendations to balance the interests of different business process participants.

Keywords: business ratios; participants of the business process; company efficiency

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2019 Volume 1 Number 1 (March)
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1. The purposes of business ratios analysis

There are many business ratios analysis methods, the classification of them is an important part of business administration theory and has a long history. According to Mark Rubinstein book "A history of the theory of investment", valuation methods development stages can be divided into three-time periods – the ancient period (pre-1950), the classical period (1950-1980) and the modern period (post-1980). Interest in evaluation of companies' performance does not fade (e.g. Batkovskiy et al. 2018; Manuylenko et al. 2018; Narkunienė, Ulbinaitė 2018; Zemguliene, Valukonis 2018; Subačienė et al. 2018; Vegera et al. 2018).

In 1949 Benjamin Graham, known as "the father of value investing," expounded his investment philosophy in the popular investment classic, "The Intelligent Investor". Graham's advises based investing on a careful analysis of so called "business fundamentals", paying close attention to price-earnings (P/E) ratios, dividend yield, and other financial ratios of security analysis. The advice to invest only in stocks with market values not far above the value of their tangible assets laid the foundation for business ratios analysis.

Historically, the first accounting statements-based performance measurement ratios were earnings and returns based only. Since Markowitz (1952) and Roy (1952), financial economists have argued that the second aspect of performance is the risk. The necessity to consider and evaluate risk became a powerful stimulus for business ratios analysis methods development. The first popular method to measure risk from financial statements was the current assets to current liabilities ratio analysis. As the next step, the ratio of earnings before interest and taxes (EBIT) to annual interest payments was suggested as a measure of default risk. Later different authors suggested different default risk measures, until at 1967 Edward Altman using methods of discriminant analysis introduced Z-factor as a valid method for bankruptcy prediction:

$$Z = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E,$$

where A is working capital/total assets, B is retained earnings/total assets, C is earnings before interest and tax/total assets, D is the market value of equity/total liabilities, E is sales/total assets (Kenton, 2018).

In 1964 William F. Sharp developed Capital Asset Pricing Model (CAPM) that divided the expected security return to the sum of the riskless return plus the product of market wide risk aversion and the covariance of security return with the return of the market portfolio. The CAPM can be interpreted as providing a prescription for discounting an uncertain cash flow received at the end of a single period. The CAPM has had a significant influence on subsequent academic work in finance. It is now commonly used by professionals as the backbone of approaches to evaluate investments and measure the performance of investment managers. Moreover, it can be given some credit for encouraging the development of index funds in the decades since its discovery.

In 1999 Stern Stewart & Company has successfully popularized EVA (economic value added), which became a central ratio for investment decisions making. In 2005 Markus K. Brunnermeier and Jonathan Parker developed the model for the description of relations between behavioral probabilities and preferences. According to this model market participants increase probabilities of outcomes they prefer and decrease probabilities of outcomes they don't like and the analysis of situation needs appropriate business ratios analysis (Rubinstein, 2006).

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2019 Volume 1 Number 1 (March)
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In this paper, we suggest two-dimensional classification for business ratios analysis methods. The first dimension of the suggested classification is related to the goal of analysis – who and what for performs the business ratios analysis. Usually, participants of business process perform business ratios analysis to evaluate how their interests are satisfied in certain business and to work out recommendations for business processes corrections according to their interests. To understand the differences in business ratios analysis methods used by different participants of the business process, it is necessary to consider the interests of real and potential participants of the business process.

There are six main participants of the business process - four real, already existing participants and two potential participants. Real participants are owners, workers, managers, and society, potential participants are creditors and investors.

The main interests of owners of a business are related to business profitability and business market value. Old business administration theory considered the profit as the main interest of owners; modern approaches consider the market value as other significant interest of them. In addition to profitability, the questions related to financial leverage are important to owners. The main business ratios for owners' analysis are ROE, RE, OF, NPV.

The main interests of workers are salary and working conditions, therefore salary and social expenses describing ratios are in the focus of workers' attention in business ratios analysis.

The main interest of society, presented in business processes mostly by state, is the correspondence of business processes to all state laws and regulations, especially to the tax and labor safety regulations. Therefore, tax and labor safety ratios are in the focus of the state's attention.

The main interest of managers is to keep the interests of all real participants in balance and to ensure the long-term existence of a company. Long-term competitiveness of a company depends on many factors, including the ability to generate profit larger than average in the industry during strategic time intervals. The business ratios for analysis from the managerial point of view are earnings (EBITDA, EBIT, EBT, EAT, RE), returns (ROI, ROA, ROE), assets (FA, CA, OF, LTL, CL, TA) and others. The business ratios analysis from the managerial point of view is most complicated comparing with others methods.

The main interest of creditors is to return their credits with maximal interest and minimal risk, therefore the main ratios for analysis are a credit risk, liquidity, debt ratio.
The main interest of investors is the market value of the company, therefore the main ratios for analysis are NPV, EVA, NOPAT, WACC here.

2. The levels of business ratios analysis

The second suggested dimension for business ratios analysis methods classification is the depth of analysis and we suggest four levels here.

The first level of business ratios analysis is the level of operations and such ratios as earnings (EBITDA, EBIT, EBT, EAT, RE), returns (ROI, ROA, ROE), assets (FA, CA, OF, LTL, CL, TA) are considered at this level. There are two major operation performance drivers on an operational level – Sales Margin and Sales/Total Assets ratio. Sales Margin measures what is left when the total operating cost is deducted from Sales. Sales to Total Assets ratio identifies the level of the activity of the company. These ratios allow managers to monitor the operational performance of the company. Both Sales Margin and Sales/Total Assets are components of ROTA, which is calculated as EBIT divided by Total Assets (Walsh, 2003, pp. 84-87).

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2019 Volume 1 Number 1 (March)
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The second level of business ratios analysis is the financial leverage level and such ratios as Debt/Equity, Interest, Tax, ROE are considered at this level. The main idea of financial leverage is to use cheap external financial sources instead of expensive internal sources to increase ROE without changing ROA. From the managerial point of view, the most important problem at this level is to ensure the proper balance between profit and risk, because external sources use usually increases both of them. This is the reason why the Debt/Equity ratio has great importance for risk management. The impulse to achieve high returns for the shareholders must be in balance with the risk (Walsh, 2003).

The third level of business ratios analysis is the stock market level and such ratios as NPV, EVA, NOPAT, WACC are considered here. Stock market level includes market to book ratio also, which is calculated dividing ROE by earnings yield (Walsh, 2003). If the growth prospects of a company are good and future promises high returns, the company will be interesting for investors, who are buying the expected future returns. However, they at the same time investors trade off risk against return and for a high-perceived risk, they will look for a high return. Investors weight up many factors - the prospects for the economy overall, industrial sector, particular company (Walsh, 2003) and try to compare the Net Present Value of company with its present market price.

The fourth level of business ratios analysis is the functional level or the level of structural units. Independently on interests of participants of business process, a company should perform such standard business functions as the creation of organizational structure, financial, human and material resources management, main business activity organization, marketing and others. Usually, special structural units are created in the company to perform most significant business functions and the quantitative evaluation of business functions performance needs to consider business ratios, which describe appropriate units.

3. The classification of business ratios analysis

The suggested two-dimensional classification of business ratios analysis methods generates the following six by four matrix:

Table 1. The classification of business ratios analysis methods

	Operations	Financial Leverage	Market Valuation	Functional Level
Owners	EBITDA, EBIT EBT, EAT, TA, FA, CA, OF, LTL, CL, ROI, ROA, ROE	D/E, ROA, ROE	NPV, EVA, SVA, NOPAT, WACC	Unit's ratios
Workers	Salary	Salary	Salary	Unit's ratios
State	Tax	Tax	Tax	Unit's ratios
Managers	EBITDA, EBIT EBT, EAT, TA, FA, CA, OF, LTL, CL, ROI, ROA, ROE	D/E, ROA, ROE	NPV, EVA, SVA, NOPAT, WACC	Unit's ratios
Creditors	EBITDA, EBIT EBT, EAT Credit history	EBITDA, EBIT EBT, EAT Credit history	NPV, EVA, SVA, NOPAT, WACC	Unit's ratios

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(4)

Investors	EBITDA, EBIT EBT, EAT, OF, ROI, ROA, ROE	D/E, ROA, ROE	NPV, EVA, SVA, NOPAT, WACC	Unit's ratios

Source: made by article's authors

For each cell of Table 1, it is possible to identify business ratios, which are important for the certain participant at the given level. The next question is how to use those ratios for analysis.

Business ratios analysis methods conventionally can be separated into three groups – "hard filtering", "soft filtering" and "indicators calculation". Hard filtering is ratio analysis method when ratios are classified according to diapasons "from-to". For example, if we select stocks for investment, we can take as conditions for selection the following criteria: "Capitalization more than 1 billion" and "ROE from 1% to 9%" etc. Soft filtering is ratio analysis method when companies receive rating points for their ratios. Soft filtering is more flexible compared with hard filtering because a company can be selected for investment even if it's capitalization is a little less than one billion, but it has good values of other ratios. Indicators calculation is the method of business ratios analysis which is close to soft filtering, but the calculation of appropriate indicator can be more complicated than rating evaluation and include additional data about the business environment, such as stock market index.

Business ratios analysis methods from the same class can be compared among themselves to identify most appropriate for the user. Let us consider for example several managerial operational level business ratios analysis methods.

4. Audit-it method

The audit-it business ratios analysis method is a paid service provided at the international level by audit company "Avdeev & Co". This system evaluates the company`s ratio, which is called "The Final Rating of Financial Condition" (FRFC) and is a weighted sum of two intermediate ratios – Financial Position and Financial Performance. Financial position ratio includes the following ratios from financial statements - debt ratio, non-current assets to net worth, current ratio, quick ratio, and cash ratio. Financial performance includes ROE, ROA and sales growth. Ratios are evaluated from "-2" (very bad) to "+2" (excellent) comparing them with the recommended values. Estimation criteria are described in Table 2.

Table 2. Audit-it method estimation criteria

Ratio	Criteria
Debt ratio	"2" < 0.15 ≤ "1". ≤ 0.3 < "0" ≤ 0.5 < "-1" < 0.6 ≤ "-2"
Non-current assets to net worth	"2" < 0.5 ≤ "1" ≤ 1 < "0" ≤ 1.25 < "-1" ≤ 2 < "-2"
Current ratio	"-2" < 1 ≤ "-1" < 2 ≤ "0" < 2.1 ≤ "1" <2.5< "2"
Quick ratio	"-2" < 0.5 ≤ "-1" < 1 ≤ "0" < 1.1 ≤ "1" <1.5< "2"
Cash ratio	"-2" < 0.05 ≤ "-1" < 0.2 ≤ "0" < 0.22 < "1" < 0.25≤ "2"
ROE	"-2" < 0 ≤ "-1" < 0.06 ≤"0" < 0.12< "1" < 0.2 ≤ "2"
ROA	"-2" < 0 ≤ "-1" < 0.03 ≤"0" < 0.06< "1" < 0.1 ≤ "2"
Sales growth	"-2"<-0.3 < "-1" < - 0.04 < "0" < 0.04< "+1" < 0.3 < "+2"

Source: (Audit-it, 2018)

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(4)

In audit-it method ratios estimations are calculated for different time periods – past, present, and future. Value for the past is calculated as the arithmetical average of the calculated ratios before the reporting period. Value for the present is equal to ratio value for the reporting period. Value for the future is calculated as linear trend extrapolation for 1 year ahead from the reporting period.

Each of time period (past, present, future) has its own "time weight factor"- 25% for past, 60% for present and 15% for future (Audit-it, 2018). In addition to "time weight factor, each ratio has its own "significance weight factor" listed in Table 3.

Table 3. Significance weight factors for Audit-it factors

Ratio	Ratio Group	Weighting factor
Debt ratio	Financial position	0.3
Non-current assets to net worth	Financial position	0.15
Current ratio	Financial position	0.2
Quick ratio	Financial position	0.2
Cash ratio	Financial position	0.15
ROE	Financial performance	0.5
ROA	Financial performance	0.3
Sales growth	Financial performance	0.2

Source: (Ready ratios, 2018)

The Final Rating of Financial Condition (FRFC) is calculated by the following formula (Audit-it, 2018):

FRFC = Financial position · 0.6 + Financial performance · 0.4

5. Lursoft method

Lursoft business ratios analysis is method is a service provided by Latvian company Lursoft. The Lursoft rating of the company is calculated using six major ratios:

1. Solvency- characterizes the specific weight of the company equity capital in the total assets. The specific weight of this index in the determination of rating is 30%.
2. Profit before taxes - shows profit or loss of the company for the period before withholding of taxes. The specific weight in rating determination is 20%
3. Liquidity - characterizes the ability of the company to settle its short-term liabilities. The specific weight of this index in rating determination is 20%.
4. Turnover increase - average increase for the last three years. If the company is younger, the last available years are considered. The specific weight in rating determination is 10%.
5. Return on equity - net profit divided by the equity capital. The specific weight in rating determination is 10%.
6. Liabilities - creditor turnover for the last accounting year. The specific weight in rating determination is 10%.

According to each index (solvency, liquidity, etc.), the companies are ranked from the largest to the smallest. They are each assigned a rating point from 0 to 100. The company ranked first gets 100 rating points, the middle

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(4)

rank gets 50 rating points, while the last gets 0 points. Other companies get the points proportionally in accordance with their rank (LURSOFT, 2018).

6. Corporate success evaluation method

Corporate success evaluation method was developed by the group of authors (Barhatov, 2016) for the evaluation of success degree of Russian companies. According to this methodology, the main company`s success evaluation criteria are the ability to grow, ability to make profit and ability to achieve outlined objectives. Methodology offers three business ratios based indicators and one time factor related indicator for assessing the success of the company. The first success indicator is sales revenue growth rate (BS_1), $BS_1 = \frac{TR - TR^{-1}}{TR^{-1}}$ where TR – sales revenue in the current year, TR^{-1} – sales revenue in the previous year. The second success indicator is the return on sales (BS_2), $BS_2 = \frac{E}{S}$ where E – net profit for the period of review, S – sales revenue for the period of review. The third success indicator is return on assets (BS_3), $BS_3 = \frac{E}{A}$ where E – net profit for the period of review, A – total assets at the end of the period of review. To consider the time factor, methodology suggests using the indicator R_4^t with a minimum value of 0 and maximum value 1:

$R_4^t = \frac{N}{N_{max}} = \frac{t - T_{found}}{t - 1991}$ where t is current year, N – company`s existence in a number of years
N_{max} – company`s maximum possible existence in a number of years (counting since 1991)
T_{found} - company`s foundation (registration) year.

The overall score of the company`s success in points is determined by the sum of all indicators.

7. Comparison of business ratios analysis methods

For the situation analysis in different Baltic countries and for the business ratios analysis methods comparison we have calculated ratings of Baltic stocks companies according to all above mentioned methods. Data for Latvian companies are presented in Table 4, data for Baltic companies are analyzed in the other article presented at this conference. For Latvian stock companies, results are as follows.

Table 4. The comparison of business ratios analysis methods

Company	Final score	Financial position	Financial performance	sales growth	NI to sales	NI to TA	Lursoft	Price 2016	Price 2017	Price change	Price change %
Brīvais Vilnis	0.05	-1.05	1.70	-0.12	-0.05	-0.05	1.90	0.94	0.80	-0.14	-0.15
Ditton pievadķēžu rūpnīca	-0.59	-1.95	1.45	-0.05	-0.33	-0.30	3.10	0.08	0.19	0.11	1.34
Grindeks	1.35	1.10	1.73	-0.01	0.02	0.02	3.70	4.39	6.80	2.41	0.55
Grobiņa	-1.16	-1.74	-0.30	0.08	-0.24	-0.02	2.20	2.50	6.00	3.50	1.40

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(4)

Hansa Matrix	-0.23	-1.58	1.80	0.15	-0.04	-0.03	3.20	7.95	8.14	0.19	0.02
Kurzemes atslega	1.15	0.79	1.70	-0.02	-0.02	-0.02	3.50	1.15	1.53	0.38	0.33
Latvijas Balzams	1.00	0.61	1.60	0.03	0.10	0.06	4.00	7.52	8.20	0.68	0.09
Latvijas Gāze	1.31	1.13	1.57	0.02	0.08	0.05	3.60	8.78	10.00	1.22	0.14
Latvijas Jūras medicīnas centrs	1.37	1.10	1.77	0.07	0.07	0.04	3.90	2.50	8.00	5.50	2.20
Olainfarm	1.02	0.50	1.80	0.14	0.12	0.10	3.20	8.51	8.05	-0.46	-0.05
PATA Saldus	-0.24	-1.60	1.80	0.09	0.01	0.02	3.40	17.00	18.50	1.50	0.09
Rīgas autoelektroaparātu rūpnīca	-0.60	-0.42	-0.87	-0.31	-7.05	-0.05	1.20	0.23	0.19	-0.04	-0.17
Rīgas elektromašīnbūves rūpnīca	0.27	-0.81	1.90	0.07	0.01	0.01	3.30	1.26	2.87	1.61	1.28
Rīgas juvelierizstrādājumu rūpnīca	1.39	1.21	1.66	0.02	-0.12	-0.05	3.00	0.12	0.09	-0.03	-0.23
Rīgas kuģu būvētava	0.01	-0.77	1.19	-0.31	-0.03	-0.01	2.00	0.36	0.26	-0.09	-0.26
SAF Tehnika	1.50	1.31	1.78	0.04	0.06	0.06	2.90	3.51	6.45	2.94	0.84
Siguldas ciltslietu un mākslīgās apsēklošanas stacija	1.48	1.40	1.60	0.02	0.10	0.07	3.40	3.00	3.60	0.60	0.20
Valmieras stikla šķiedra	-0.41	-1.76	1.62	0.12	0.06	0.05	2.90	3.11	3.70	0.59	0.19
VEF	0.36	-0.51	1.68	0.04	0.09	0.02	3.30	0.43	1.50	1.07	2.49
VEF Radiotehnika RRR	0.08	-0.51	0.96	-0.13	-0.10	0.09	3.50	0.11	0.18	0.07	0.63
Price growth correlation	**-0.04**	**-0.07**	**0.05**	**0.28**	**0.20**	**-0.11**	**0.30**				

Source: made by article's authors

There are two main sequences from Table 4 data and one of them was expected before the research and other was not expected. The expected sequence is that different operational level managerial business ratios analysis methods give very similar results. It means, that after ordering by one or another method's rating we receive very similar lists, where only several stock companies are changed in order, the correlation between indicators of different systems and even between components of indicators are very high. For example, for Latvian stock companies correl (final_score, financial_position) = 0.94, correl (busn_success, financial_performance) =0.77, correl (busn_success, Lursoft_rating) = 0.65, correl (net_incom_to_sales, Lursoft_rating) = 0.63, correl (sales_growth, Lursoft_rating) = 0.6.

By other words, as it was expected we receive independent direct confirmation of the high degree of accordance between different managerial business ratios analysis methods. It is natural, that on the operational level problem, which is identified by one method would be identified by other methods also.

The result which was unexpected is that for Latvian stock companies there are no direct relations between the results of company managerial operational level evaluation and stock price growth as a reflection of market evaluation. For example, correl (final_score, price_change%) = -0.04, correl (Lursoft_rating, price_change%) = 0.3, correl (busn_success, price_change%) = 0.2. It means, that prices of stocks for companies with good Audit-it ratings can be not growing, but prices of stocks for companies with bad Audit-it ratings can be growing. In less degree, but the same situation is with Lursoft and business success ratings - operational level business ratios are not directly related to stock price growth.

The theoretical explanation of this unexpected experimental observation for Latvian stock companies is that market is sensitive not only to operational level processes but for financial leverage level processes also. If the company can attract financial resources with interest rate significantly less than profit, ROE can be considerably higher than ROA, which is very attractive for investorsand promotes the stock price growth, but such effects are not visible on the operational level. Therefore, the operational level managerial business ratios analysis methods can not be efficiently used for investment decisions making and other methods should be used instead.

Conclusions

1. In this paper, we suggest two-dimensional classification for business ratios analysis methods.
2. We have considered several operational level managerial business ratios analysis methods and used them for Latvian stock companies ratings calculation.
3. As it was expected, we have received independent direct confirmation of the high degree of accordance between different managerial business ratios analysis methods.
4. As it was unexpected, we have received experimental confirmation that managerial level business analysis methods can not be directly used for investment decisions making.

References

Audit-it. (2019). *Reiting finansovogo sostojanija*. Retrieved from Audit-it: https://www.audit-it.ru/finanaliz/manual/#_metodika_index.php

Barhatov V.I., P. D. (2016). *Model uspeshnogo predprijatija malogo i srednego biznesa v Rossiji: monografija.* Moskva: Published by Pero

Batkovskiy, A.M.; Efimova, N.S.; Kalachanov, V.D.; Semenova, E.G.; Fomina, A.V.; Balashov, V.M. (2018). Evaluation of the efficiency of industrial management in high-technology industries. 2018. *Entrepreneurship and Sustainability Issues* 6(2): 577-590. http://doi.org/10.9770/jesi.2018.6.2(8)

Kenton, W. (2018). *Altman Z-Score.* Retrieved from Investopedia: https://www.investopedia.com/terms/a/altman.asp

LURSOFT (2018). *Rating of the company.* Retrieved from LURSOFT: https://www.lursoft.lv/en/rating-of-the-company

Manuylenko, V.V.: Loktionova, M.A.; Lipchiu, N.V.; Sobchenko, N. V., Sadovskaya, T.A. (2018). Options simulation toolkit for strategic evaluation of corporations' financial potential, *Entrepreneurship and Sustainability Issues* 6(2): 871-889. http://doi.org/10.9770/jesi.2018.6.2(27)

Narkunienė, J.; Ulbinaitė, A. (2018). Comparative analysis of company performance evaluation methods, *Entrepreneurship and Sustainability Issues* 6(1): 125-138. http://doi.org/10.9770/jesi.2018.6.1(10)

Ready ratios (2018). *Calculation of the Final Rating of the Financial Condition*. Retrieved from Ready Ratios: https://www.readyratios.com/features/full_report.html

Rubinstein, M. (2006). *A history of the theory of investment.* Hoboken: Published by John Wiley & Sons, Inc.

Subačienė, R.; Alver, L.: Brūna, I.; Hladika, M.; Mokošová, D.; Molín, J. 2018. Evaluation of accounting regulation evolution in selected countries, *Entrepreneurship and Sustainability Issues* 6(1): 139-175. http://doi.org/10.9770/jesi.2018.6.1(11)

Vegera, S.; Malei, A.; Trubovich, R. 2018. Accounting development of natural resources in organizations carrying out the disposal of municipal waste and biogas extraction in the context of the "green" economy, *Entrepreneurship and Sustainability Issues* 6(1): 211-225. http://doi.org/10.9770/jesi.2018.6.1(14)

Walsh, C. (2003). *Key management ratios*. Harlow: Published by Prentice Hall Financial Times.

Zemguliene, J.; Valukonis, M. **(**2018). Structured literature review on business process performance analysis and evaluation, *Entrepreneurship and Sustainability Issues* 6(1): 226-252. http://doi.org/10.9770/jesi.2018.6.1(15)

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COMPARATIVE ASSESSMENT OF HDI WITH COMPOSITE DEVELOPMENT INDEX (CDI)

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Abstract. This paper presents a novel approach to measure the human development, progress and growth of any country. The authors have developed an alternative index to the conventional 'HDI', named as 'Composite Development Index (CDI)' and have also presented an original approach to evaluate it quantitatively. The CDI integrates all the three (social, economic and environmental) aspects of sustainable development, along with peace and happiness. As proposed, the CDI is based on four parameters, i.e. Inequality adjusted HDI (IHDI), Scaled Green Index, Scaled Peace Index and Scaled Happiness Index, evaluated from globally accepted standard databases. Hence, the CDI is much more comprehensive and rational than the conventional HDI or GDP. The CDI values have been evaluated quantitatively for 126 countries of the world. Further, comparative assessment of the CDI has been done with the HDI for all the 126 nations. The results obtained have been startling as no country was even able to have a CDI score of 0.8 on a scale of 0.1 to 1. Switzerland had the highest CDI of 0.767. A country like Norway with the highest HDI of 0.953 had a CDI of only 0.742. On the other hand, countries like Costa Rica, Romania and Uruguay are in the top 20 nations in the CDI Ranking, much ahead of the countries like United Kingdom, France, and USA. The CDI can act as a single point of reference for policy-makers, governments and other development agencies, as it presents a consolidated picture of a country's development. Future course of action on the basis of the concept of CDI are also proposed. It can be concluded that efforts to have a high CDI (in comparison to a high GDP or HDI only) will pave the way forward for sustainable development and holistic progress for all the countries of the world.

Keywords: Human Development Index (HDI); peace; happiness; ecological footprint; Composite Development Index

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JEL Classifications: 011, 015

Additional disciplines (besides field of economics reflected in JEL classifications): sociology; ecology and environment.

1. Introduction

The adequacy of the GDP and the HDI as a measure of human welfare and development has been questionable for many years now. GDP is an indicator of economic activity of an economy, but it has wrongly been referred to as a very broad measure of human welfare (Costanza et al., 2009, Stiglitz et al., 2010). Nobel Laureate Joseph Stiglitz (2009) has linked the economic recession in 2009 to GDP fetishism of countries. Kuznets (1934), Marcuss and Kane (2007), McCulla and Smith (2007) have mentioned that GDP had never been developed to measure the socio-economic welfare of a nation; still it is the most prevalent parameter in measuring the overall growth and

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
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performance of any country. Costanza et al (2004) have exemplified a major issue with the GDP with an oil spill, whose occurrence would increase the GDP due to the associated cost of cleanup and remediation, but obviously its occurrence is undesirable from the environmental perspective. One more potential flaw with the GDP is that it does not take into account the distribution of income among individuals, which has a major impact on the social well being of any person (Wilkinson and Pickett, 2009). Kubiszewski et al (2013) have developed the GPI (Genuine Progress Index) because of these drawbacks of the GDP. Costanza et al (2009) have explicitly mentioned the shortcomings associated with the GDP by stating that GDP is a measure of 'economic quantity' and not 'economic quality' and 'human welfare'. They have also stated that due to the 'continued misuse' of the GDP, an immediate change in the indicators is required for the policy makers and the governments to frame policies and evaluate progress**.**

Due to these pitfalls associated with the GDP, many other indices of human welfare like the Human Development Index (HDI), Index of Sustainable Economic Welfare (ISEW), Sustainable Net benefit Index (SNBI), Index of Economic Well-Being (IEWB), Happy Planet Index (HPI) were developed (Lawn, 2005; Koroneos and Rokos, 2012). Prakash (2011, 2013) has developed the HPI (Holistic Progress Index) that is more comprehensive and based on more factors than the HDI or GDP to reflect peaceful and sustainable development without curtailing human freedom.

The Human Development Index (HDI) was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. It is the geometric mean of normalized indices for each of the three dimensions (HDR: Human Development Reports, UNDP).

But, the widely adopted HDI has also been a subject of much criticism and subsequent modification. Smith (1993) pioneered to bring about and support significant modifications to the HDI. Noorbakhsh (1998) has highlighted various criticisms of the HDI and has also developed four modified indices of the HDI. Taner et al. (2011) have developed an alternative to the HDI considering unemployment. Mazumdar (2003) has developed an alternative method to calculate the HDI using the unadjusted Per Capita Real Gross Domestic Product (PCRGDP)**.** Comim (2016) has tried to enlarge the human development perspective by using the capability approaches of Amartya Sen and Martha Nussbaum. He also investigates alternative measures of human development, including subjective, goals-based, sustainability and other indicators of human development**.** Jahan (2002) has identified some imperfections in the HDI and has also listed some alternative indices like the HPI (Human Poverty Index), GDI (Gender-related Development Index) and Gender Empowerment Measure (GEM)**.** In 2010, a new index named as Inequality Adjusted HDI was published considering the Gini Coefficient and the relevance of inequalities due to efforts of Paul (1996), Hicks (1997) along with Hirschowitz and Orkin (1997). Ogwang (2000) and Fukuda-Parr (2003) have given suggestions for the addition of gender dimensions to the HDI. Harttgen and Klasen (2010) have advocated the use of a household based HDI. Furthermore, Doessel ve Gounder (1994) has suggested the importance of absolute values over rankings in the estimation of the HDI. Panigrahi and Sivramkrishna (2002), Osberg and Sharpe (2003), Cherchye, Ooghe and Van Puyenbroeck (2008) have expressed their concerns with the HDI rankings. Harkness (2004) has highlighted reliable data collection as a major obstruction in low-income countries**.**

Relevant scientific literature on security and sustainability issues around the world can be found; which indicates a variety of approaches adopted for sustainable development. For energy security in the European Union, Melas et al (2017) and Abrhám et al (2018) have pointed out the positive role of renewable energy and distributed 'green energy' systems for self reliance. Bilan et al (2017) and Dudzevičiūtė and Prakapienė (2018) point out inclusive growth in European countries by examining social enterprises and interlinkages between poverty and income

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

inequality. Ślusarczyk and Kot (2018) have examined plastic free sustainable packaging as a contributor to sustainability in Poland. Smaliukiene (2018) points out a new trend of incorporating sustainability in military activities. Suleimenova et al (2018) examine requirements of environmental protection in food sector in a megalopolis.

Rees (1992); Wackernagel and Rees (1996); Rees (2017); Wackernagel et al. (2002, 2005) have utilized ecological footprint as an indicator of sustainable consumption. Moran et al. (2008) have mentioned that the ecological footprint to biocapacity could act as a useful indicator of environmental sustainability. They have also incorporated ecological footprint as a sustainability indicator alongwith the HDI so that development is within the regenerative biocapacity of planet Earth (Moran et al., 2008). Hence, the inculcation of the ecological footprint as an indicator of environmental sustainability is gaining much importance. Costanza et al., 2009 have also advocated for development that is within the carrying capacity of our supporting ecosystems.

In view of the deficiencies of important development parameters such as ecological footprint, peace and happiness in the above referred literature; the authors have developed an index of holistic progress and human development, named as the Composite Development Index (CDI). The CDI presents a fresh and comprehensive approach to measure the human development, progress, prosperity, welfare and growth of any country by taking into consideration the following four factors: HDI, ecological footprint, peace and happiness. All these parameters have been given equal weighting factors as the authors consider that all of them carry equal significance. A nation's very high GDP growth with a degraded environment and poor happiness record is not only a facade, but also self-destructing and impoverishing in the long run if the high economic growth is not in harmony with the social and environmental realms. The authors have evaluated the CDI for 126 nations and have ranked them accordingly. Also, a comparative assessment of the countries on the basis of their HDI ranking and their CDI ranking has also been done. The CDI as proposed has the potential to act as a comprehensive and complete index of sustainable development, human welfare and progress and the CDI rankings enlighten the way forward for all the countries of the world (developed or developing) to move in the right direction. The CDI can act as a single point of reference for policy-makers, governments and other development agencies and can pave the way forward for our sustainable future on the planet Earth.

2. Methodology

The HDI is based on merely three parameters (GDP, Literacy and health) and essentially does not represent a complete measure of human progress. It does not include other parameters like environmental impacts of human activities, happiness and peace that are integral to human development and growth of any nation. On the other hand, the Composite Development Index (CDI) incorporates practically all the major dimensions of a country's prosperity and does not rank countries simply on the basis of their high GDP.
The following four parameters have been considered as crucial to determining the human development of any country and have been included in the CDI:

1. Inequality adjusted HDI (IHDI)
2. Scaled Happiness Index
3. Scaled Peace Index
4. Scaled Green Index

All these 4 parameters have been taken from widely accepted and reputed indices from their official reports and websites.

The formula used to calculate the CDI of any country is:

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

CDI = 0.25 X (IHDI + Scaled Green Index + Scaled Happiness Index + Scaled Peace Index)

All the four parameters of the CDI have been given equal weighting factors in the CDI. This is due to the absence any rational basis, which provides relative importance of various parameters linked to human development and growth.

The value of the CDI would vary between 0.1 to 1 for any country.

2.1 Inequality adjusted HDI (IHDI)

It cannot be denied that the HDI is an apt measure of a country's economic prosperity, education and health of its population. The IHDI goes a step further to show how the achievements in HDI are distributed among a nation's residents. The IHDI connotes the level of human development when inequality is accounted for. The relative difference between IHDI and HDI values is the loss due to inequality in distribution of the HDI within the country.

The absolute values of the IHDI have been accessed from the UNDP's website (HDII, 2018).
Hence, the absolute IHDI values have been used for the evaluation of CDI as the IHDI is an improvement over the conventional HDI. Further, the IHDI values as available from the cited reference vary between 0.25 to 0.88.

2.2 Scaled Green Index

The environmental impacts due to human activities have taken a toll on the Earth. The ecological footprint per capita (EF/capita) helps in the quantitative assessment of the impacts of human activities on earth. It can be used to examine various measures such as the feasibility of resource consumption, distribution of the world's natural resources, waste assimilation and the overall sustainability of a country. The purpose of including the scaled green index in the CDI is to ensure that high human development does not occur at the cost of detrimental impacts to the environment and high material and resource consumption. The sustainability of a nation has been given equal importance as its GDP or IHDI.

The relative ranks of various countries based on their ecological footprint/capita have been taken from the 'Global Footprint Network' website (GFN, 2018).

Scaled Green Index = $(0.1 + 0.9 * (X_g / X_t))$

X_t = Total number of countries considered for the scaled green index calculation
X_g = EF /capita rank of a country (The country with the highest EF/capita will have the X_g value of 1 and that with the lowest EF/capita; $X_g = X_t$)

Hence, the quantitative value of the scaled green index would vary between 0.1 and 1.

2.3 Scaled Happiness Index

The Happiness Index has been based on the comprehensive 'World Happiness Report', 2018 (WHR, 2018). The Happiness Index incorporates the following factors and ranks countries on the basis of their happiness level.

- GDP per capita
- Social support

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

- Healthy life expectancy
- Freedom to make life choices
- Generosity
- Perceptions of corruption
- Dystopia and residual factors

The scaled happiness index has been included in the evaluation of the CDI because the happiness level of the people of any nation is equally important as its GDP or HDI growth. If a country has a majority of population that is stressed and morose, it will eventually lead to unsustainable growth and internal conflicts, thereby reducing its peace index.

Scaled Happiness Index = $(0.1 + 0.9 * (X_t - X_h) / X_t)$

X_t = Total number of countries considered for Scaled Happiness Index calculation
X_h = Relative rank of a country based on Happiness Index (The country with the highest happiness index will have the X_h value of 1 and that with the lowest happiness index; $X_h = X_t$)

Hence, the quantitative value of the scaled happiness index would vary between 0.1 and 1.

2.4 Scaled Peace Index

The scaled peace index is based on the 'Global Peace Index' report, 2018 (GPI, 2018). The Peace Index considers the following factors and ranks countries on the basis of their peace:

1. Safety and Security
2. Militarization
3. Ongoing Conflicts

The scaled peace index has been incorporated in the CDI because merely a high HDI or IHDI with great internal dissent and unrest does not hold much water. Also, the Global Peace Index of any country shows the amount of money spent for military expenditure (more than 5% of the GDP for some countries) that could be invested for developmental purposes.

Scaled Peace Index = $(0.1 + 0.9 * (X_t - X_p / X_t))$

X_t = Total number of countries considered for the evaluation of scaled peace index.
X_p = Relative rank of a country based on its 'Global Peace Index' (The country with the highest peace index will have the X_p value of 1 and that with the lowest happiness index; $X_p = X_t$)

Hence, the quantitative value of the scaled peace index would vary between 0.1 and 1.

3. Results

The CDI has been calculated for 126 nations by calculating the values for all the 4 parameters (i.e. IHDI, scaled green index, scaled happiness index, scaled peace index). Then, the values of all the 4 parameters have been summed up and multiplied by 0.25 so as to get the final value of CDI between 0.1 and 1.

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

3.1 Inequality adjusted HDI (IHDI)

The absolute values of the IHDI have been used for the computation of the CDI and they have been mentioned in Column (a) of Table 1.

3.2 Scaled Green Index

The scaled green index has been calculated using the formula given in section 2.2. The values of the scaled green index for 126 nations are mentioned in Column (b) of Table 1. Countries like USA and Canada that have a very high EF/capita have a very low scaled green index (very close to the minimum value 0.1). On the other hand, countries with a low EF/capita like India and Zambia have a very high scaled green index (close to 1).

3.3 Scaled Happiness Index

The scaled happiness index has been calculated using the formula given in section 2.3. The values of the scaled happiness index for 126 nations are mentioned in Column (c) of Table 1. Countries like Sweden and Netherlands rank very high on the scaled happiness index (close to the maximum value 1). On the other hand, countries like Angola, Togo and Sudan rank very low on the scaled happiness index (close to 0.1).

3.4 Scaled Peace Index

The scaled peace index has been calculated using the formula given in section 2.4. The values of the scaled peace index for 126 nations are mentioned in Column (d) of Table 1. Countries like Pakistan and Sudan that have a high degree of militarization and ongoing conflicts have a very low scaled peace index (very close to the minimum value 0.1). On the other hand, peaceful countries like Ireland and Canada score very high on the scaled peace index (close to 1).

Discussion

After substituting the values of all the 4 parameters in the formula of CDI, the values and ranks of CDI of all the 126 nations was computed. Switzerland emerged as the nation with the highest CDI (0.767), followed by Ireland (0.757), Norway (0.742) and Finland (0.741).

Further, the CDI and HDI ranks and values of all 126 nations were compared, and the complete comparative assessment is given in Table 2. The top 15 countries on the basis of their CDI and HDI are represented in Fig. 1 and Fig. 2 respectively.
Norway, which has the highest HDI (0.953), has a CDI of 0.742. This is due to its high ecological footprint per capita leading to a very low scaled green index (0.19). Similarly, countries like UK and France rank 24 and 31 as per the CDI ranking due to their scaled green index and scaled peace index.

Surprisingly, countries like Romania, Uruguay and Costa Rica that rank 52nd, 55th and 63rd in the HDI ranking, fare pretty well in the CDI ranking and secure the 13th, 14th and 8th spot respectively out of 126 countries, surpassing even very high HDI countries like Singapore, USA, France and UK. This contrast is explained by the higher scaled green index, scaled happiness index and scaled peace index of Romania, Uruguay and Costa Rica as compared to Singapore, USA, France and UK.

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2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

USA was able to secure the 70th rank in the CDI ranking, with a CDI of 0.538. On the other hand, it has a pretty high HDI of 0.924 and ranks 13th as per the HDI ranking. The culprit is the high EF/capita of USA leading to a poor scaled green index of 0.13 and the high degree of militarization leading to a low peace index of 0.33.
Even countries like Switzerland, Ireland and Norway that have bagged the top spots in the CDI ranking have a lot of scope to improve their CDI values. They need to reduce their ecological footprint/capita so that their scaled green index increase, thereby improving their CDI values.

Table 1. CDI Calculations for 126 nations

COUNTRY	IHDI (a)	Scaled Green Index (b)	Scaled Happiness Index (c)	Scaled Peace Index (d)	CDI (e)
India	0.468	0.880319149	0.232692308	0.249079755	0.458
China	0.643	0.411170213	0.503846154	0.381595092	0.485
Japan	0.876	0.305851064	0.688461538	0.950306748	0.705
Thailand	0.636	0.588297872	0.734615385	0.37607362	0.584
Russia	0.738	0.253191489	0.659615385	0.149693252	0.450
Australia	0.861	0.152659574	0.942307692	0.928220859	0.721
UK	0.835	0.30106383	0.890384615	0.685276074	0.678
France	0.808	0.315425532	0.867307692	0.663190184	0.663
Germany	0.861	0.281914894	0.913461538	0.906134969	0.741
Sweden	0.864	0.171808511	0.948076923	0.922699387	0.727
Netherlands	0.857	0.205319149	0.965384615	0.873006135	0.725
Italy	0.771	0.368085106	0.728846154	0.790184049	0.665
Greece	0.753	0.363297872	0.544230769	0.563803681	0.556
USA	0.797	0.128723404	0.896153846	0.33190184	0.538
Canada	0.852	0.133510638	0.959615385	0.966871166	0.728
Mexico	0.609	0.569148936	0.861538462	0.226993865	0.567
Brazil	0.578	0.511702128	0.838461538	0.414723926	0.586
Argentina	0.707	0.415957447	0.832692308	0.635582822	0.648
Egypt	0.493	0.674468085	0.296153846	0.21595092	0.420
Ethiopia	0.331	0.904255319	0.267307692	0.232515337	0.434
Norway	0.876	0.190957447	0.988461538	0.911656442	0.742
Switzerland	0.871	0.291489362	0.971153846	0.933742331	0.767
South Korea	0.773	0.224468085	0.671153846	0.729447853	0.600
Ireland	0.854	0.310638298	0.919230769	0.944785276	0.757
Singapore	0.816	0.214893617	0.803846154	0.955828221	0.698
Denmark	0.86	0.143085106	0.982692308	0.972392638	0.740
Finland	0.868	0.186170213	0.994230769	0.917177914	0.741
Belgium	0.836	0.162234043	0.907692308	0.88404908	0.697
Austria	0.835	0.210106383	0.930769231	0.983435583	0.740
Israel	0.787	0.325	0.936538462	0.193865031	0.561
Slovenia	0.846	0.329787234	0.705769231	0.939263804	0.705

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

Spain	0.754	0.401595745	0.671153846	0.834355828	0.665
Cyprus	0.769	0.473404255	0.648076923	0.657668712	0.637
Poland	0.787	0.34893617	0.757692308	0.823312883	0.679
Lithuania	0.757	0.234042553	0.711538462	0.801226994	0.626
Slovakia	0.797	0.37287234	0.775	0.878527607	0.706
Latvia	0.759	0.243617021	0.694230769	0.828834356	0.631
Portugal	0.732	0.420744681	0.555769231	0.97791411	0.672
Chile	0.71	0.392021277	0.855769231	0.845398773	0.701
Hungary	0.772	0.439893617	0.601923077	0.906134969	0.680
Croatia	0.756	0.435106383	0.526923077	0.850920245	0.642
Montenegro	0.741	0.454255319	0.532692308	0.679754601	0.602
Bulgaria	0.71	0.497340426	0.423076923	0.850920245	0.620
Romania	0.717	0.554787234	0.7	0.867484663	0.710
Belarus	0.755	0.320212766	0.578846154	0.442331288	0.524
Uruguay	0.689	0.52606383	0.821153846	0.795705521	0.708
Kazakhstan	0.737	0.229255319	0.653846154	0.613496933	0.558
Iran	0.707	0.463829787	0.388461538	0.276687117	0.459
Costa Rica	0.651	0.583510638	0.925	0.779141104	0.735
Turkey	0.669	0.492553191	0.573076923	0.177300613	0.478
Mauritius	0.683	0.449468085	0.682692308	0.889570552	0.676
Panama	0.623	0.607446809	0.844230769	0.72392638	0.700
Serbia	0.667	0.540425532	0.55	0.701840491	0.615
Albania	0.706	0.636170213	0.353846154	0.712883436	0.602
Georgia	0.682	0.698404255	0.873076923	0.436809816	0.673
Sri Lanka	0.664	0.789361702	0.261538462	0.63006135	0.586
Bosnia and Herzegovina	0.649	0.482978723	0.330769231	0.508588957	0.493
Venezuela	0.636	0.487765957	0.463461538	0.210429448	0.449
Azerbaijan	0.681	0.631382979	0.411538462	0.271165644	0.499
The former Yugoslav Republic of Macedonia	0.661	0.506914894	0.486538462	0.519631902	0.544
Armenia	0.68	0.664893617	0.255769231	0.337423313	0.485
Algeria	0.598	0.593085106	0.515384615	0.398159509	0.526
Ecuador	0.603	0.660106383	0.723076923	0.585889571	0.643
Ukraine	0.701	0.530851064	0.203846154	0.160736196	0.399
Peru	0.606	0.617021277	0.625	0.591411043	0.610
Colombia	0.571	0.688829787	0.786538462	0.199386503	0.561
Mongolia	0.639	0.119148936	0.457692308	0.74601227	0.490
Jordan	0.617	0.640957447	0.480769231	0.458895706	0.549
Tunisia	0.573	0.621808511	0.359615385	0.569325153	0.531
Jamaica	0.608	0.722340426	0.676923077	0.503067485	0.628
Turkmenistan	0.575	0.257978723	0.607692308	0.342944785	0.446
Gabon	0.545	0.559574468	0.405769231	0.475460123	0.496

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

Paraguay	0.522	0.425531915	0.630769231	0.574846626	0.538
Philippines	0.574	0.899468085	0.590384615	0.243558282	0.577
South Africa	0.467	0.459042553	0.394230769	0.309815951	0.408
Indonesia	0.563	0.760638298	0.446153846	0.696319018	0.617
Viet Nam	0.574	0.741489362	0.451923077	0.668711656	0.609
Bolivia (Plurinational State of)	0.514	0.516489362	0.642307692	0.243558282	0.479
Iraq	0.546	0.650531915	0.325	0.480981595	0.501
El Salvador	0.524	0.669680851	0.769230769	0.116564417	0.520
Kyrgyzstan	0.606	0.731914894	0.469230769	0.359509202	0.542
Nicaragua	0.507	0.794148936	0.763461538	0.624539877	0.672
Guatemala	0.467	0.707978723	0.826923077	0.387116564	0.597
Tajikistan	0.562	0.932978723	0.538461538	0.370552147	0.601
Namibia	0.422	0.645744681	0.313461538	0.762576687	0.536
Honduras	0.459	0.746276596	0.584615385	0.348466258	0.535
Bhutan	0.446	0.334574468	0.440384615	0.895092025	0.529
Bangladesh	0.462	0.961702128	0.336538462	0.486503067	0.562
Congo(Republic)	0.469	0.856382979	0.342307692	0.304294479	0.493
Lao People's Democratic Republic	0.445	0.717553191	0.365384615	0.74601227	0.568
Ghana	0.42	0.679255319	0.376923077	0.773619632	0.562
Kenya	0.434	0.913829787	0.284615385	0.320858896	0.488
Zambia	0.388	0.942553191	0.278846154	0.734969325	0.586
Cambodia	0.469	0.82287234	0.307692308	0.46993865	0.517
Angola	0.393	0.770212766	0.180769231	0.541717791	0.471
Myanmar	0.466	0.775	0.25	0.326380368	0.454
Nepal	0.427	0.918617021	0.417307692	0.536196319	0.575
Pakistan	0.387	0.966489362	0.567307692	0.166257669	0.522
Cameroon	0.366	0.842021277	0.428846154	0.265644172	0.476
Tanzania (United Republic of)	0.404	0.79893617	0.117307692	0.718404908	0.510
Nigeria	0.347	0.885106383	0.475	0.182822086	0.472
Rwanda	0.367	0.971276596	0.128846154	0.431288344	0.475
Lesotho	0.359	0.808510638	0.186538462	0.425766871	0.445
Mauritania	0.348	0.612234043	0.273076923	0.298773006	0.383
Madagascar	0.385	0.928191489	0.175	0.790184049	0.570
Uganda	0.37	0.870744681	0.221153846	0.409202454	0.468
Benin	0.326	0.818085106	0.215384615	0.619018405	0.495
Senegal	0.34	0.889893617	0.371153846	0.712883436	0.578
Togo	0.344	0.894680851	0.198076923	0.458895706	0.474
Sudan	0.328	0.851595745	0.209615385	0.155214724	0.386
Afghanistan	0.35	0.97606383	0.163461538	0.105521472	0.399
Haiti	0.304	0.985638298	0.146153846	0.514110429	0.487
Malawi	0.332	0.956914894	0.151923077	0.757055215	0.549

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

Guinea	0.306	0.803723404	0.192307692	0.46993865	0.443
Congo (Democratic Republic of the)	0.319	0.980851064	0.238461538	0.138650307	0.419
Yemen	0.308	0.923404255	0.123076923	0.127607362	0.371
Mozambique	0.294	0.947340426	0.290384615	0.525153374	0.514
Liberia	0.298	0.865957447	0.140384615	0.652147239	0.489
Mali	0.282	0.784574468	0.319230769	0.204907975	0.398
Burkina Faso	0.288	0.827659574	0.301923077	0.558282209	0.494
Sierra Leone	0.266	0.846808511	0.348076923	0.806748466	0.567
Burundi	0.278	0.990425532	0.1	0.260122699	0.407
Chad	0.249	0.75106383	0.244230769	0.254601227	0.375
South Sudan	0.247	0.779787234	0.111538462	0.111042945	0.312
Central African Republic	0.212	0.875531915	0.105769231	0.144171779	0.334
Niger	0.25	0.72712766	0.226923077	0.293251534	0.374

Table 2. HDI vs CDI Rankings of 126 countries

COUNTRY	**CDI**	**RANK(CDI)**	**HDI**	**RANK(HDI)**	**Difference**
Switzerland	0.767	1	0.944	2	1
Ireland	0.757	2	0.938	4	2
Norway	0.742	3	0.953	1	2
Finland	0.741	4	0.92	15	11
Germany	0.741	5	0.936	5	0
Austria	0.740	6	0.908	20	14
Denmark	0.740	7	0.929	11	4
Costa Rica	0.735	8	0.794	63	55
Canada	0.728	9	0.926	12	3
Sweden	0.727	10	0.933	7	3
Netherlands	0.725	11	0.931	10	1
Australia	0.721	12	0.939	3	9
Romania	0.710	13	0.811	52	39
Uruguay	0.708	14	0.804	55	41
Slovakia	0.706	15	0.855	38	23
Slovenia	0.705	16	0.896	25	9
Japan	0.705	17	0.909	19	2
Chile	0.701	18	0.843	44	26
Panama	0.700	19	0.789	66	47
Singapore	0.698	20	0.932	9	11
Belgium	0.697	21	0.916	17	4
Hungary	0.680	22	0.838	45	23

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

Poland	0.679	23	0.865	33	10
UK	0.678	24	0.922	14	10
Mauritius	0.676	25	0.79	65	40
Georgia	0.673	26	0.78	70	44
Nicaragua	0.672	27	0.658	124	97
Portugal	0.672	28	0.847	41	13
Spain	0.665	29	0.891	26	3
Italy	0.665	30	0.88	28	2
France	0.663	31	0.901	24	7
Argentina	0.648	32	0.825	47	15
Ecuador	0.643	33	0.752	86	53
Croatia	0.642	34	0.831	46	12
Cyprus	0.637	35	0.869	32	3
Latvia	0.631	36	0.847	41	5
Jamaica	0.628	37	0.732	97	60
Lithuania	0.626	38	0.858	35	3
Bulgaria	0.620	39	0.813	51	12
Indonesia	0.617	40	0.694	116	76
Serbia	0.615	41	0.787	67	26
Peru	0.610	42	0.75	89	47
Viet Nam	0.609	43	0.694	116	73
Albania	0.602	44	0.785	68	24
Montenegro	0.602	45	0.814	50	5
Tajikistan	0.601	46	0.65	127	81
South Korea	0.600	47	0.903	22	25
Guatemala	0.597	48	0.65	127	79
Sri Lanka	0.586	49	0.77	76	27
Zambia	0.586	50	0.588	144	94
Brazil	0.586	51	0.759	79	28
Thailand	0.584	52	0.755	83	31
Senegal	0.578	53	0.505	164	111
Philippines	0.577	54	0.699	113	59
Nepal	0.575	55	0.574	149	94
Madagascar	0.570	56	0.519	161	105
Lao People's Democratic Republic	0.568	57	0.601	139	82
Sierra Leone	0.567	58	0.419	184	126
Mexico	0.567	59	0.774	74	15
Ghana	0.562	60	0.592	140	80
Bangladesh	0.562	61	0.608	136	75

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

Colombia	0.561	62	0.747	90	28
Israel	0.561	63	0.903	22	41
Kazakhstan	0.558	64	58	0.8	63.2
Greece	0.556	65	0.87	31	34
Malawi	0.549	66	0.477	171	105
Jordan	0.549	67	0.735	95	28
The former Yugoslav Republic of Macedonia	0.544	68	0.757	80	12
Kyrgyzstan	0.542	69	0.672	122	53
USA	0.538	70	0.924	13	57
Paraguay	0.538	71	0.702	110	39
Namibia	0.536	72	0.647	129	57
Honduras	0.535	73	0.617	133	60
Tunisia	0.531	74	0.735	95	21
Bhutan	0.529	75	0.612	134	59
Algeria	0.526	76	0.754	85	9
Belarus	0.524	77	0.808	53	24
Pakistan	0.522	78	0.562	150	72
El Salvador	0.520	79	0.674	121	42
Cambodia	0.517	80	0.582	146	66
Mozambique	0.514	81	0.437	180	99
Tanzania (United Republic of)	0.510	82	0.538	154	72
Iraq	0.501	83	0.685	120	37
Azerbaijan	0.499	84	0.757	80	4
Gabon	0.496	85	0.702	110	25
Benin	0.495	86	0.515	163	77
Burkina Faso	0.494	87	0.423	183	96
Congo(Republic)	0.493	88	0.457	176	88
Bosnia and Herzegovina	0.493	89	0.768	77	12
Mongolia	0.490	90	0.741	92	2
Liberia	0.489	91	0.435	181	90
Kenya	0.488	92	0.59	142	50
Haiti	0.487	93	0.498	168	75
China	0.485	94	0.752	86	8
Armenia	0.485	95	0.755	83	12
Bolivia (Plurinational State of)	0.479	96	0.693	118	22
Turkey	0.478	97	0.791	64	33
Cameroon	0.476	98	0.556	151	53
Rwanda	0.475	99	0.524	158	59
Togo	0.474	100	0.503	165	65

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

Nigeria	0.472	101	0.532	157	56
Angola	0.471	102	0.581	147	45
Uganda	0.468	103	0.516	162	59
Iran	0.459	104	0.798	60	44
India	0.458	105	0.64	130	25
Myanmar	0.454	106	0.578	148	42
Russia	0.450	107	0.816	49	58
Venezuela	0.449	108	0.761	78	30
Turkmenistan	0.446	109	0.706	108	1
Lesotho	0.445	110	0.52	159	49
Guinea	0.443	111	0.459	175	64
Ethiopia	0.434	112	0.463	173	61
Egypt	0.420	113	0.696	115	2
Congo (Democratic Republic of the)	0.419	114	0.457	176	62
South Africa	0.408	115	0.699	113	2
Burundi	0.407	116	0.417	185	69
Ukraine	0.399	117	0.751	88	29
Afghanistan	0.399	118	0.498	168	50
Mali	0.398	119	0.427	182	63
Sudan	0.386	120	0.502	167	47
Mauritania	0.383	121	0.52	159	38
Chad	0.375	122	0.404	186	64
Niger	0.374	123	0.354	189	66
Yemen	0.371	124	0.452	178	54
Central African Republic	0.334	125	0.367	188	63
South Sudan	0.312	126	0.388	187	61

INSIGHTS INTO REGIONAL DEVELOPMENT
ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
http://doi.org/10.9770/IRD.2019.1.1(5)

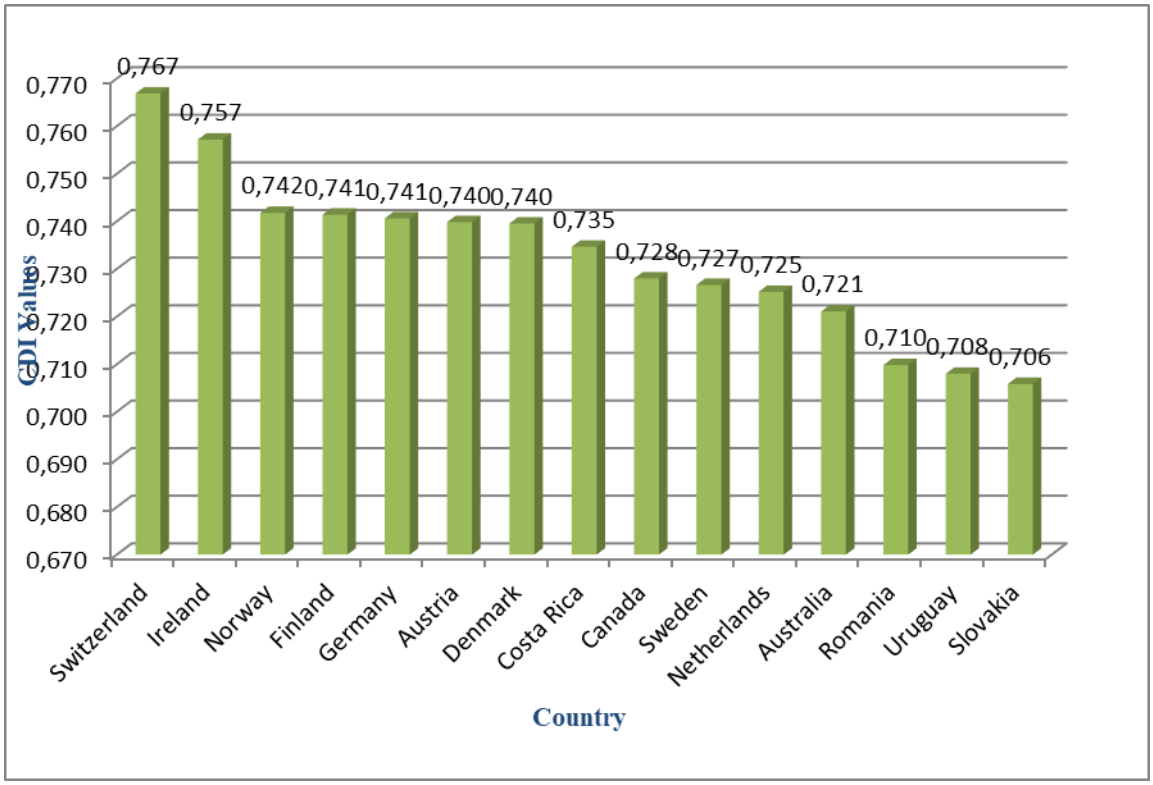

Fig.1. Top 15 nations in the CDI Ranking

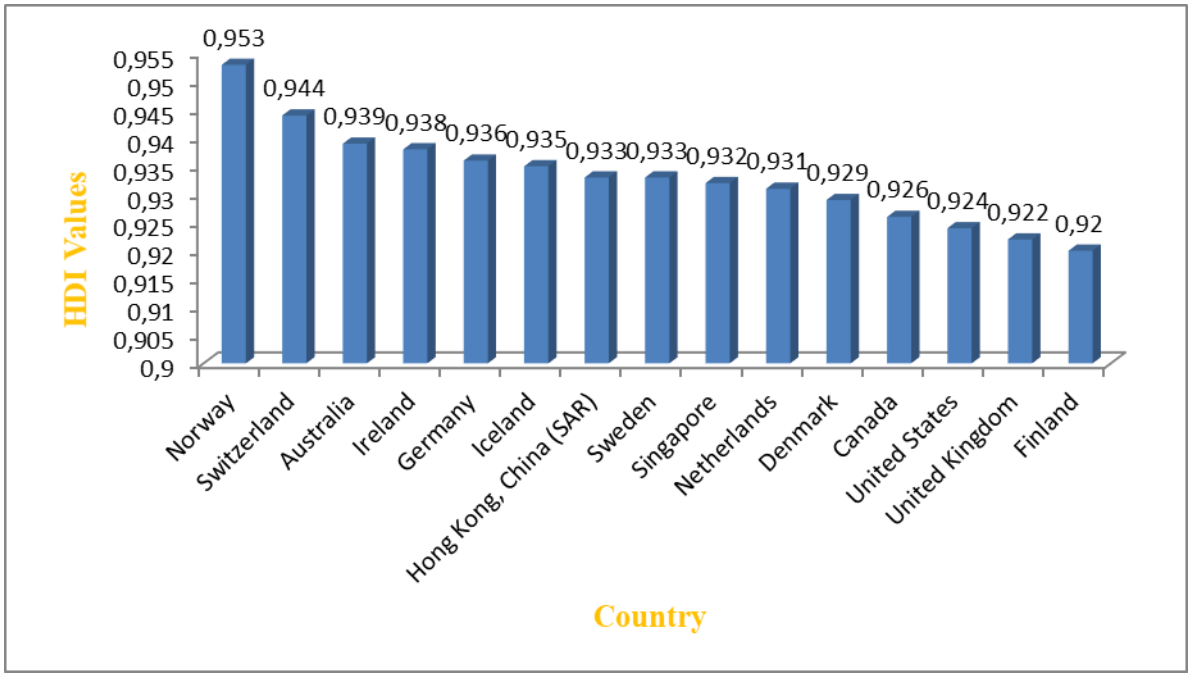

Fig.2. Top 15 nations in the HDI Ranking

ISSN 2669-0195 (online) http://jssidoi.org/jesi/
2019 Volume 1 Number 1 (March)
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4 The Way Forward

The CDI, as presented above, is a much more comprehensive and rational measure of human development and progress as compared to the conventional HDI and GDP. The following actions are proposed in order to leverage the CDI:

A. Governments and policy makers across the globe need to be persuaded to adopt the proposed CDI as an indicator of holistic development of their country, in place of the GDP or HDI.

B. The countries need to analyze the reasons for their current CDI ranking so as to identify the scope of improvement in their CDI. The rankings reveal that even the developed superpowers cannot be indifferent and ignorant towards the CDI ranking because of their current low CDI.

C. In order to improve the CDI, all countries need to frame policies so as to improve all the four development parameters associated with the CDI, i.e., HDI, peace, happiness, and environmental sustainability. Policies need to be focused on demilitarization, self-reliance, communal harmony, job satisfaction, job creation, more efficient resource utilization, reducing ecological footprint, etc. so as to ensure a high CDI rank.

D. The academic institutions, NGOs, and the private sector need to act as agents of change and catalysts in the process of sustainability, peace and happiness at the grass root level so as to help achieve the goal of a high CDI.

5 Conclusions

It has been established that GDP should not be treated as an indicator of human welfare and attainment of a high GDP must not entirely influence a country's national policies and goals (Costanza et al, 2009; Stiglitz et al, 2010). This paper presents a new indicator of human development that measures the holistic progress of any country named as CDI. The CDI is not a perfect measure of human development and progress, but it is more rational and comprehensive than the HDI or GDP. An ambiguity-free and simple methodology to quantitatively evaluate the CDI has also been discussed. The CDI is based on four well established and widely accepted factors: IHDI, Peace Index, Happiness Index and Ecological Footprint, that have been named as the IHDI, scaled peace index, scaled happiness index and scaled green index respectively. At the same time, the CDI values of 126 nations have been evaluated. On the basis of the CDI and HDI values, a comparative assessment and relative ranking of all the 126 countries has been done.

The trends in the CDI values and ranks are unexpected and astonishing. Switzerland emerged as the country with the highest CDI with a CDI of 0.767. A country like USA with an HDI rank of 13 and HDI of 0.924 has a CDI ranking of 70 and a CDI value of 0.538, ranking much behind the countries like Zambia, Sierra Leone, Senegal and Nepal which have an HDI score below 0.60. The top 15 countries on the basis of the HDI and CDI have also been presented graphically. Thus, it can be concluded that a high HDI does not ensure a high CDI value as the CDI is much more comprehensive. Further, an obsession with a high HDI or GDP growth would divert attention from other critical developmental issues like environmental sustainability, peace and happiness.

The CDI provides an architecture to build a positive relationship between all the countries of the world and harmony across peoples all around the world. Worldwide efforts to improve the CDI are the need of the hour so as to ensure our sustainable and peaceful future on the planet Earth. Let the era of the CDI begin!!

6 Scope of Future Work

In the future, this work can be expanded for all the remaining countries of the world, as and when the data for all the four parameters is available. Inclusion of more factors in the CDI may also be considered as its implementation begins in countries around the world. As pointed out in the methodology, equal weighting factors were used for different parameters for CDI evaluation. If future research in social sciences provides relative importance of various developmental parameters, suitable weighting factors may be applied accordingly in the CDI evaluation. Policy instruments need to be developed that are aimed for CDI improvement so that the overall well-being of any country increases.

Abbreviations:

CDI: Composite Development Index
GDP: Gross Domestic Product
HDI: Human Development Index
HPI: Holistic Progress Index
IHDI: Inequality adjusted Human Development Index
NGOs: Non-Governmental Organizations
UN: United Nations

References

Abrhám, J.; Britchenko, I.; Jankovic, M.; Garškaitė-Milvydienė, K. 2018. Energy security issues in contemporary Europe, *Journal of Security and Sustainability Issues* 7(3): 387–398. https://doi.org/10.9770/jssi.2018.7.3(1)

Bilan, Y., Mishchuk, H., Pylypchuk, R. 2017. Towards sustainable economic development via social entrepreneurship, *Journal of Security and Sustainability Issues* 6(4): 691-702 http://doi.org/10.9770/jssi.2017.6.4(13)

Cherchye, L., Ooghe, E., and Van Puyenbroeck, T. 2008. Robust human development rankings, *Journal of Economic Inequality* 6(4): 287-321.

Comim, F. 2016. "Beyond the HDI? Assessing alternative measures of human development from a capability perspective", 2016 UNDP Human Development Report Background Paper, http://hdr.undp.org/sites/default/files/comim_template_0.pdf , accessed on 23rd August, 2018

Costanza, R., Erickson, J., Fligger, K., Adams, A., Adams, C., Altschuler, B., Balter, S., Fisher, B., Hike, J., Kelly, J., Kerr, T., McCauley, M., Montone, K., Rauch, M., Schmiedeskamp, K., Saxton, D., Sparacino, L., Tusinski, W., Williams, L., 2004. Estimates of the Genuine Progress Indicator (GPI) for Vermont, Chittenden County and Burlington, from 1950 to 2000 , *Ecological Economic*s 51 (1–2), 139–155.

Costanza, R., Hart, M., Posner, S., Talberth, J., 2009. Beyond GDP: The Need for New Measures of Progress., THE PARDEE PAPERS / No. 4 / January 2009, The Frederick S. Pardee Center for the Study of the Longer-Range Future at Boston University https://www.bu.edu/pardee/files/documents/PP-004-GDP.pdf , accesed on 25th December, 2018

Doessel, D.P., and Gounder, R. 1994. Theory and measurement of living levels: Some empirical results for the human development index, *Journal of International Development* 6(4): 415–435

Dudzevičiūtė, G.; Prakapienė, D. 2018. Investigation of the economic growth, poverty and inequality inter-linkages in the European Union countries, *Journal of Security and Sustainability Issues* 7(4): 839-854. https://doi.org/10.9770/jssi.2018.7.4(19)

Fukuda-Parr, S. 2003. "The Human Development Paradigm: Operationalizing Sen's Ideas On Capabilities, *Feminist Economics* 9:301-317
'Global Footprint Network', GFN, http://data.footprintnetwork.org/#/ , accessed in September, 2018

'Global Peace Index (GPI), 2018, Institute for Economics and Peace, http://visionofhumanity.org/app/uploads/2018/06/Global-Peace-Index-2018-2.pdf , accessed on 14th October, 2018

Harkness, S. (2004), "Social and Political Indicators of Human Well- Being," Research Paper, 2004/33, Helsinki: United Nations University: World Institute for Development Economics Research (WIDER)

Harttgen, K., and Klasen, S. 2010. "A Household-Based Human Development Index," Human Development Research Papers, 2010/22, New York: United Nations Development Programme
HDR: Human Development Reports; http://hdr.undp.org/en/content/human-development-index-hdi

Hicks, D.A. 1997. The inequality-adjusted Human Development Index: A Constructive Proposal, World Development 25(8): 1283-1298.

Hirschowitz, R. and Orkin, M. 1997. Inequality in South Africa: Findings from the 1994 October Household Survey, S*ocial Indicators Research* 41(1-3): 119-136.

Human Development Indices and Indicators (HDII), 2018 Statistical update; http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf, accessed in October, 2018

Jahan, S. 2002. Measuring living standards and poverty: The human development index as an alternate measure. Working paper of the programme on Global Labor Standards and Living Wages, University of Massachusetts. www.umass.edu/peri/pdfs/glw_jahan.pdf

John F. Helliwell, Richard Layard and Jeffrey D. Sachs, 'World Happiness Report (WHR)', 2018, https://s3.amazonaws.com/happiness-report/2018/WHR_web.pdf , accessed on 17th October, 2018

Koroneos, Ch. J.; Rokos, D. 2012. Sustainable and Integrated Development–A Critical Analysis, *Sustainability* 4: 141–153. https://doi.org/10.3390/su4010141

Krishna Mazumdar. 2003. A New Approach to Human Development Index, *Review of Social Economy* 61(4): 535-549, https://doi.org/10.1080/0034676032000160895

Kubiszewski, I., Costanza, R., Franco, C., Lawn, P., Talberth, J., Jackson, T., Aylmer, C. 2013. Beyond GDP: Measuring and achieving global genuine progress, *Ecological Economic*s 93 (2013) 57–68, Elsevier

Kuznets, S. 1934. National Income, 1929–1932.

Lawn, Ph. A. 2005. An Assessment of the Evaluation Methods used to calculate the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and Sustainable Net Benefit Index (SNBI), *Environment, Development and Sustainability* 7: 185–208.

Marcuss, D., Kane, R.E. 2007. US national income and product statistics born of the Great Depression and World War II. Bureau of Economic Analysis: Survey of Current Business 87(2), 32–46.

McCulla, S.H., Smith, S., 2007. Measuring the Economy: A Primer on GDP and the National Income and Product Accounts.

Melas, V.; Lisin, E.; Tvaronavičienė, M., Peresadko, G.; Radwański, R. 2017. Energy security and economic development: renewables and the integration of energy systems, *Journal of Security and Sustainability Issues* 7(1): 133–139. http://dx.doi.org/10.9770/jssi.2017.7.1(11)

Moran, D., Wackernagel, M., Kitzes, J., Goldfinger, S., Boutaud, A. 2008. Measuring sustainable development — Nation by nation, *Ecological Economics* 64: 470 – 474

Noorbakhsh, F. 1998. The Human Development Index: Some Technical Issues And Alternative Indices, *Journal of International Development*, J. Int. Dev. 10, 589±605, John Wiley & Sons, Ltd.

Ogwang, T. 2000. Inter-country inequality in human development indicators, *Applied Economics Letters* 7(7): 443-446

Osberg, L., and Sharpe, A. 2003). Human Well-being and Economic Well-being: What Values Are Implicit in Current Indices?, Centre for the Study of Living Standards Research Report 2003/04, Ottowa: Centre for the Study of Living Standards.

Panigrahi, R., and Sivramkrishna, S. 2002. An adjusted Human Development Index: Robust country rankings with respect to the choice of fixed maximum and minimum indicator values, *Journal of Human Development* 3(2): 301-311

Paul, S. 1996. A modified human development index and international comparison, *Applied Economics Letters* 3(10): 677-682.

Prakash, R. 2011. Is the concept of a green economy a useful way of framing policy discussions and policymaking to promote sustainable development?, *Natural Resource Forum* 35(1): 63-72, United Nations, https://doi.org/10.1111/j.1477-8947.2011.01347.x

Prakash, R. 2013. Looking beyond the GDP: quantitative evaluation of the "Holistic Progress Index" (HPI)", *Journal of Security and Sustainability Issues* 2(4): 57–64 http://dx.doi.org/10.9770/jssi.2013.2.4(6)

Rees, W. 1992. Ecological footprints and appropriated carrying capacity: what urban economics leaves out, *Environment and Urbanisation* 4.

Rees, W. 2017. **E**cological Footprints and Appropriated Carrying Capacity: What Urban Economics Leaves Out, *Urbanization* 2(1): 66-77 https://doi.org/10.1177/2455747117699722

Ślusarczyk, B.; Kot S. 2018. Solution for sustainable development: provisions limiting the consumption of disposable plastic carrier bags in Poland, *Journal of Security and Sustainability Issues* 7(3): 449–458. https://doi.org/10.9770/jssi.2018.7.3(7)

Smaliukiene, R. 2018. Sustainability issues in the military: genesis and prospects, *Journal of Security and Sustainability Issues* 8(1): 19-32. https://doi.org/10.9770/jssi.2018.8.1(2)

Smith, P. 1993. Measuring human development, *Asian Economic Journal* 7(1): 89–106.

Stiglitz, J. 2009. GDP Fetishism. Available on the Internet: http://www.project syndicate.org/commentary/stiglitz116/English

Stiglitz, J.E., Sen, A., Fitoussi, J.P., 2010. Mismeasuring Our Lives: Why GDP Doesn't Add Up. The New Press, New York.

Suleimenova, M. S.; Kulazhanov, T.K.; Akhmetova, S. O.; Daribayev, Z.E.; Moldagazyyeva, Z. Y. 2018. Food security and ecological safety of megalopolis: a case study analysis, *Journal of Security and Sustainability Issues* 7(3): 495–511. https://doi.org/10.9770/jssi.2018.7.3(10)

Taner, M., Sezen, B., Mıhcı, H., Year. 2011. An Alternative Human Development Index Considering Unemployment, 6(1): 45-60, *South East European Journal of Economics and Business*, The Journal of University of Sarajevo, https://doi.org/10.2478/v10033-011-0005-z

Wackernagel, M., Monfreda, C., Moran, D., Wermer, P., Goldfinger, S., Deumling, D., Murray, M., 2005. National footprint and biocapacity accounts.The underlying calculation method. Global Footprint Network www.footprintnetwork.org

Wackernagel, M., Rees, W., 1996. Our Ecological Footprint: Reducing Human Impact on the Earth. New Society Publishers.

Wackernagel, M., Schulz, B., Deumling, D., Callejas Linares, A., Jenkins, M., Kapos, V., Monfreda, C., Loh, J., Myers, N., Norgaard, R., Randers, J., 2002. Tracking the ecological overshoot of the human economy. Proceedings of the National Academy of Science 99, 9266–9271.

Wilkinson, R.G., Pickett, K., 2009. The Spirit Level: Why Greater Equality Makes Societies Stronger. Bloomsbury Press, New York.

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