

Thesis of the Doctoral Dissertation

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KAPOSVÁR

2022



HUNGARIAN UNIVERSITY OF AGRICULTURE  
AND LIFE SCIENCES

MATE DOCTORAL SCHOOL OF MANAGEMENT AND  
ORGANIZATIONAL SCIENCE, KAPOSVÁR

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SOCIO-ECONOMIC CHALLENGES IN  
SUSTAINABILITY AND RESOURCE MANAGEMENT

CREATED BY  
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Kaposvár

2022



## **Author's declaration**

Whilst registered as a candidate for the above-mentioned degree, I have not been registered for any other research award. The results and conclusions embodied in this dissertation are the work of the named candidate and have not been submitted for any other academic award.

In preparation for this dissertation, three peer-reviewed scientific publications were published by the author as being the lead-author or as publishing as the sole author. These publications have been incorporated into this dissertation. Some of the data used in the papers has been updated to the current state-of-the-art.

## Abstract

This dissertation uses in first stage a macroeconomic investigation to examine the dependence, influence and corruption of socio-economic development through effects of sustainability and resource management. The conducted research found that the state's dependence on its citizens decreases when the state's sources of revenue are largely detached and independent of the citizens' financial resources. In this case, financial resources are taxes and duties provided by the citizens. One possible consequence is the restriction of state investment in its citizens. Both the qualitative literature review and the quantitative data analysis revealed a negative correlation between socio-economic development and the resource economy's share of GDP for the period under study. The microeconomic investigation was primarily conducted through an intensive literature review. It was shown that the rebound effect as such is already very well researched. However, it also became clear that avoidance strategies for the rebound effect and links to sustainability initiatives are scarce or non-existent. The need for a redesign of the impact analysis with regard to technological innovations and their influence on resource consumption and resource management has become clear on the basis of the present study. Further, emerging and developing countries in particular, which will be confronted in the foreseeable future not only with the fundamental problems of resource abundance in the overall economic context, but also with the issues of their sustainable use, should be confronted with these problems as early as possible in order to find solutions in a timely manner.

**Keywords:** efficiency side-effects, resource-optimization, rebound effect, socio-economics

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## **RESEARCH BACKGROUND AND OBJECTIVE**

As a very young scientific subject, the literature on socio-economics (sometimes also social economics) is not yet particularly well defined as an independent discipline (Mikl-Horke, 2015). This is also due in particular to the fact that the scientific field of socio-economics is an interdisciplinary field of research between economic factors and their social context (Hellmich, 2017). Other important core aspects of socio-economics relate to political, ecological and social developments, effects and processes in connection with economic decisions, procedures and structures (Hedtke, 2015a).

The interweaving of socio-economic development and resource wealth under the consideration of the Human Development Index has also only been sparsely examined so far.

Socio-economics is not defined as a single science, but encompasses various facets of different scientific disciplines. This makes it a useful subject when it comes to examining the impact of resource-oriented state management and technological efficiency effects on the economy and society. Due to this fact, the range of definitions of the term socio-economics varies greatly. Amitai Etzioni is considered to be one of the first authors to have dealt with the topic and to have coined the term socio-economics. As early as 1988, Etzioni wrote a book entitled "The Moral Dimension. Toward a New Economics" on the extension of classical economics to include a moral constant (Etzioni, 2014). In 1990, Amitai Etzioni wrote a chapter entitled "Socio-Economics: The Next Steps" in the book "Socio-economics: Toward a New Synthesis" (Etzioni, 2016). A major incubator for today's research in this area as well as a motivator for the integration of socio-economics into current social debates is the realisation in recent years and decades that classical economic models only provide inadequate forecasts and also explain past social upheavals caused, for

example, by economic or natural disruptions only with difficulty or inadequately (Hedtke, 2015b). Beneath others the areas of influence that socio-economics aims to make more explainable and treatable are the ever-increasing environmental pollution and the greater frequency of natural disasters, as well as the changed dynamics in households and destabilising processes such as rainforest deforestation (Rahman et al., 2014; Schmutter et al., 2017). The characteristics and area of application can therefore differ greatly depending on the basic scientific approach. Another definition of socio-economics, to which this thesis also refers, was published in 2008 by John Bryan Davis, Wilfred Dolfsma. The authors define the field by saying that economic and social processes cannot be considered separately, so socio-economics examines the (economic market) from a social point of view with a strong influence of ethics. Ethics is defined here as "how values are inescapably intertwined with social relationships" (Davis & Dolfsma, 2008).

## **Contributions of the Research**

In the context of this thesis, various goals are to be addressed and, in the best case, new knowledge is to be created. Furthermore, the aim of this thesis is to obtain a comprehensive overview of the topics dealt with and to enable a classification of the relevant thematic literature in the field of resource and sustainability management in the context of socio-economics. In particular, the following objectives are also within the scope of the thesis and are presented and dealt with in the given scientific papers in chapter “Publications”:

- The rebound-effect is to be demonstrated, processed and analysed in the context of socio-economics, especially in corporate sustainability and resource management perspectives
- To provide a theoretical approach on how to reduce or avoid the rebound-effect in context of corporate sustainability
- Evaluation of the impact of resource surpluses on socio-economic factors in both developed and developing countries using Norway and Nigeria as examples.
- Analyse to what extent there is a relationship between a country’s HDI Value (proxy value of socio-economic development) and the share of resources in its GDP
- Analyse whether the integration of corporate sustainability in companies leads to an increase in total resource production and consumption through efficiency gains.

**THE METHODOLOGY SUMMARY OF THE  
DISSERTATION**

This thesis maps both theoretical and practical approaches to the research field, therefore it was intended to validate the research relevance for the fields of resource and sustainability management before commencing the research. In addition to the analysis and interpretation of secondary data, an intensive and detailed literature review was conducted (Baumeister & Leary, 1997). In the following, the results of the data analysis and the literature research were compared and merged.

Additionally, a scientific survey was developed and distributed to business professionals in 28 face-to-face interviews and another 65 digitally to verify the relevance of research for the micro-economic part of investigation. A cumulative of 62 questionnaires met the quality standard and were validated and analysed to highlight the relevance of the topic (Rowley, 2014). The analysis of the results shows that sustainability management is seen as useful to increase both the company's reputation and productivity.

However, the analysis also showed that sustainability measures are hardly used despite this attitude. Furthermore, stakeholders seem to have a growing interest in the concept of sustainability management, while the practical applications are not yet very well known. Lastly, the information collected is intended for further research and has been prepared accordingly. This is supported by a clear, scientific definition of each source used through the APA 7th edition citation system.

## **Ethical Issues**

The word or term "ethics" can be defined in its original form as "the science of those manners and customs which form the laws of human action and give character to human life" (Murray, 1891). Further, ethics in the context of scientific work and research can be interpreted as "rules, principles, and a standard of conduct that apply to analysis" (McMillan & Weyers, 2007). In order to meet basic scientific standards, a reference to the origin and source was given for all data collected and analysed. Even though the topic of the thesis basically touches on several ethical issues, the author does not currently see any problems with regard to ethical standards in this thesis, as most of the information was collected through secondary data, literature and anonymised statistical analyses. The survey and interviews were anonymised.

## **MATERIALS AND METHODS**

The thesis follows different methodological approaches which, however, are principally pursued through a deductive research approach. It should be noted that the conclusions of a deductive argument can only be correct if all the premises established in the inductive studies and theories are true and the concepts are clear. Since scientifically sound theories and models were used, this is a matter of course. No own inductive research has been done but scientifically established models and theories were chosen. As the author undertook the research deductively, he started his research by selecting those applicable theories after conducting critical literature reviews at both macro and micro level as shown in Figure 1. In the following, the author formulated three different hypotheses:

- H1** The share of resource revenues in GDP has no influence on the HDI value and thus, on the socio-economic development of a country classified as a rentier state.
- H2** Integration of corporate sustainability measures results in increased overall resource output and resource consumption through efficiency gains.
- H3** Demand elasticity and consumer behaviour has a positive impact on the effectiveness of sustainability measures in companies.

Accordingly, the data for testing the hypotheses was collected by analysing numerical and literature databases. Then, all three hypotheses were tested individually using different scientific approaches (see Figure 1). Finally, the hypotheses were rejected or accepted depending on the results of the data analysis and the research conducted.

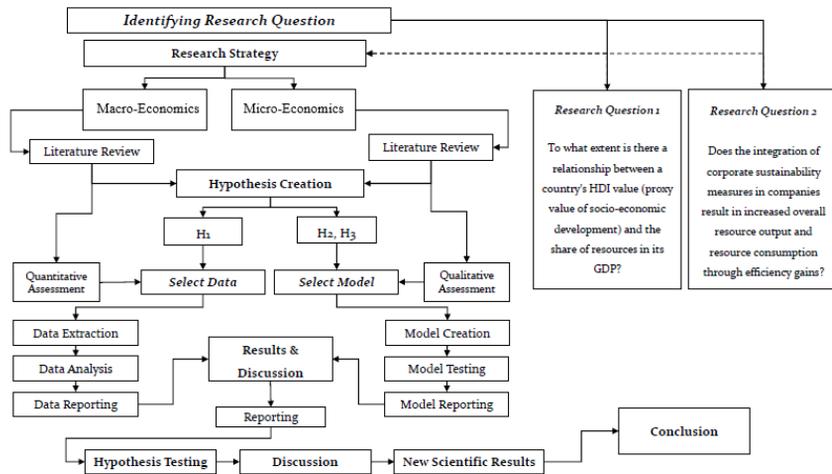


Figure 1: Research Methodology Visualisation, self-created figure

In order to address both micro- and macro-economic levels, three different papers have been published. The first paper is focusing on the research question “to what extent is there a relationship between a country’s HDI value (proxy value of socio-economic development) and the share of resources in its GDP”. This paper prepared a literature review on the topic and then addressed the research questions by first creating a dataset and then using a quantitative analysis conducting linear and polynomial regression analysis. Further, two more papers have been published addressing the micro-economic research question “does the integration of corporate sustainability measures in companies result in increased overall resource output and resource consumption through efficiency gains”. Based on inclusion and exclusion criteria, from which corresponding findings were then presented. According to the review conducted, models have been chosen to test against the created hypothesis later on. After merging, preparing and processing the data of all three papers, the relevant data is transferred to the results and discussion phase. Hence, a three-stage rigorous review process was followed for the investigation (Kitchenham, 2004).

## **RESULTS**

The aim of this thesis was to identify the socio-economic challenges that exist with regard to resource and sustainability management. This was substantiated by the three hypotheses

**H1** The share of resource revenues in GDP has no influence on the HDI value and thus, on the socio-economic development of a country classified as a rentier state.

**H2** Integration of corporate sustainability measures results in increased overall resource output and resource consumption through efficiency gains.

**H3** Demand elasticity and consumer behaviour has a positive impact on the effectiveness of sustainability measures in companies.

### **Discussion of Macroeconomic Perspectives**

Paper 1 discussed the macroeconomic perspective of the research, regarding socio-economic challenge in context of resource management. To conduct research, the HDI Index was selected as the lead index due to its nature and structure. In particular, because this index lists the parameters that are important for the author's research, including life expectancy at birth, average length of schooling, expected length of schooling and gross national income per capita. All these parameters are directly or implicitly indicative of the state's motivation to invest in infrastructure and population and are therefore suitable for socio-economic analysis.

Hence, the literature review has revealed that there are different theoretical frameworks and approaches to resource management in previous and current research in the broader context of socio-economics. Beneath others, the presented approaches of (Jevons, 2016a), (Szirmai, 2015) and (Haq, 1995) as well as (Yates, 1996) illustrated the general influence of resource wealth on the ecological and social behaviour of a country in a theoretical

approach. Especially, the concept of the rentier state, which is predicated on the wealth of natural resources, set the stage for a scientific discussion of the problem posed (Rahman et al., 2014). The literature review conducted and the qualitative analyses revealed that resource wealth tends to have a negative impact on a country's socio-economic prospects.

The imbalance caused by resource wealth in terms of dependency between the state and citizens was particularly debatable in this view. Basically, the rents generated by oil, for example, decouple the principle of interdependence, as the state no longer relies on the tax revenues of its citizens and thus stops investing in them. This is underlined by the fact that human rights and democracy are interwoven with a negative correlation as well (Besson, 2011). The consequence of this is that, due to the lack of investment, citizens no longer seek to trust the state and look for (sometimes criminal or illegal) substitutes.

When these alternatives are found, there is no longer any interdependence between the citizen and the state. To investigate these findings further, a quantitative analysis was conducted. For this purpose, data from the World Bank on the share of resource rents in GDP was collected and put into an analysable standard.

In addition, the corresponding data of the HDI index were obtained for the same period. In a statistical analysis, an endeavour was made to interlink these two data sets and to determine whether a (statistical) correlation could be established. In its findings, the analysis was able to show that the share of resource revenues in GDP has a negative influence on the HDI value and thus on the overall socio-economic development in the countries studied. Considering the statistical uncertainty and also considering that the models used only partially reflect reality, a higher share of resource sales in GDP leads to a lower HDI value.

It also leads to a slower or less favourable development of the respective country due to a negative correlation between thus two variables. From this analysis it can be deduced that the null hypothesis of this thesis can be rejected, since based on the present results there is an influence of the share of resources in GDP on socio-economic aspects. However, it must be noted that the results from the statistical analysis are only valid for the selected period and the selected countries.

If one look at the variables in a smaller or larger time period, the results may change. Overall, however, the trend is similar to the selected period of observation even with a larger period of observation.

### **Discussion of Microeconomic Perspectives**

With paper 2 and paper 3 discussed the microeconomic perspective of the research, in the same cluster of socio-economic challenges in context of resource management. Evaluating the results of both papers, the author was able to understand the microeconomic effects when developing his own research and use case, which created a model of a company that wanted to reduce its environmental impact by optimising resources through sustainability management. The initial draft envisaged that the Green Controlling department of the fictitious company would elaborate a policy for this. For this the use and consumption as well as the emission of the resource's grey energy, virtual water and CO<sub>2</sub> should be diminished.

This would also be in line with the latest state of the technology in measures to act more sustainably as a company in a whole. In a preliminary effort, a new product design system was put in place in collaboration with the "Green IT" department. The resources freed up by this system were then used by the "Green Manufacturing" sub-division to establish a new and

more resource-efficient production process, which also reduces the environmental costs and thus the overall cost structure of the company.

Up to this point, it was clear that the technological and conceptual changes within the company would lead to the consumption of fewer resources. Executive management, nevertheless, then decided to pass on this cost reduction achieved through more efficient resource use to customers through a lower price of the product. In line with the presumed elastic demand for the company's product, the associated increase in demand from the price lowering was so significant that the economies of scale offset the resource savings gained from the implemented environmentally friendly measures. This way, the total resource consumption was significantly higher than before the optimisations due to the higher sales. This highlighted the importance of an interdisciplinary and holistic perspective when planning and implementing resource savings.

In particular, the business management aspect in the consideration of the maximum profit to be achieved lies here on the management.

Thus, the management must decide whether to choose the maximum saleable quantity or a sales quantity that considers the total resource consumption and is adjusted accordingly. This results in a margin of environmental protection and profit maximisation, which must be decided individually on the basis of one's own moral concepts.

Although state regulation can be considered, a system of incentives in the context of a (social) capitalist market economy would, in the author's opinion, be more expedient. This would, at least in theory, reconcile both the company's need to make greater profits and environmental protection. Through these conclusions, it was possible to show that the integration of corporate sustainability measures results in increased overall resource output and resource consumption through efficiency gains.

Further it was shown that considering demand elasticity and consumer behaviour enhances effectiveness of corporate sustainability measures, thus benefiting socio-economic development.

### **Discussion of the Outcomes**

In particular, the findings from the macroeconomic analysis "Sustainable Development: A Quantitative Analysis Regarding the Impact of Resource Rents on State Welfare from 2002 to 2017" and the qualitative microeconomic analysis "An Evaluation of Corporate Sustainability in Context of the Jevons Paradox" support the statement that both resource and sustainability management have a significant impact and interrelations on and with socio-economic factors. The field of socio-economics deals with economic activity in its social context. Thus, the interdependence of resource management and socio-economic impact in the two analysed and rentier state classified countries was shown. Further, the impact of integrating sustainability management on economic and social factors was shown as well.

## CONCLUSION

A country's socio-economic development is influenced in particular by the indicators of the Human Development Index. The index, in adding its own explicit data such as life expectancy at birth and the average number of years of schooling completed and expected, includes economic well-being in the form of gross national income per capita to assess a country's level of advancement. In the particular sub-sectors, other metrics are important that consider both economic and socio-logical gauges. These are gender equality, job security, the ratio of imports to exports and a host of other socio-economic markers. The HDI was the leading index in the process of the research. It was serving as a benchmark for any further analyses and observations. In addition, data from the World Bank as well as secondary data from recent literature revealed that resource wealth in specific does have a tendential negative impact on a country's socio-economic progression. This is likely to be due, in combination with unstable political conditions, to the prevailing imbalance of dependencies between the state and its citizens, among other causes. This imbalance arises in particular when the state does not generate a significant part of its revenue from taxation. If the state's sources of revenue are largely detached and independent of the financial resources provided by the citizen in the form of taxes, the dependence of the state on its citizens decreases, according to the literature examined, which can lead to the situation that the state reduces its investments in the citizen as a result. In particular, revenues from resource extraction and sales play an important role in this problem in emerging and developing countries. The data analysis found a negative correlation between the HDI ranking and the share of the resource economy in GDP for the period studied. However, the correct administration and handling of state resources is not only important in developing and emerging countries. Research has also found that resource management and use play an important role in the

macro- and microeconomic analysis. In particular, the rebound effect has been studied and especially its extreme form as the Jevons paradox. Thus, especially in industrialised nations, where technological progress is particularly strong and fast, the goal of sustainable use of resources can be contrasted by the rebound effect. Despite the fact that an intensified literature research has demonstrated that the rebound effect as such is very well researched already, it became apparent that abatement measures for the rebound effect are scarcely or not at all available. Just as there is practically no discussion of this problem in the general public debate, which results in the making of macro- and microeconomic wrong decisions with reference to sustainability management (see rebound effect in LED technology). The reason for ignoring the negative effects of technological progress on the sustainable use of resources, apart from the complexity of the matter, is the lack of precise information. The need for a redesign of the impact analysis with regard to technological innovation and its influence on the consumption of resources has become clear on the basis of the present research. Otherwise, efforts to establish a more sustainable economy through resource-saving technologies will turn into the opposite, as market effects (including the principle of supply and demand) will prevent implementation. Emerging and developing countries in particular, which in the foreseeable future will be confronted with the issues of efficiency increases through technology, should be confronted with these problems as early as possible. In this way, a social, governmental and economic framework can be created, which channels the challenges of resource and sustainability management relevant to society as a whole as effectively as possible.

## **NEW SCIENTIFIC RESULTS**

## **Macro-Economic Results**

1. For the sample examined (Norway and Nigeria) it was shown that the share of resource revenues in GDP is influencing the HDI value negatively and thus impacts also the overall socio-economic development negatively of the countries.
2. Research has shown that there is a negative interaction between the share of resources in GDP and the HDI value of a country, which translates into a more gradual or adverse socio-economic evolution of the country in question. Reasons are found for this in particular in the decoupling of state and citizen
3. Research conducted has shown that negative correlation holds true for both Nigeria and Norway for the monitored time period, even though the national culture and society are very much apart.<sup>1</sup>

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<sup>1</sup> it should be noted that a rather simplified model of reality was utilized in the course of the analysis, which therefore does not include all the influential drivers of the "real" world in this analysis. Moreover, the period of observation was restricted to 15 years.

## **Micro-Economic Results**

1. Research conducted show that technological progress leads to increased resource consumption through increased consumer demand when the demand modified by technological progress exceeds the resource savings from the newly established technology.
2. It was shown that reduction, consumption and emission of grey energy, virtual water and CO<sub>2</sub> is thwarted by effects of technological improvements, economic supply-demand function and the rebound effect in context of sustainability measures.
3. However, research conducted has also shown that the benefits of increasing efficiency through the use of new and resource-saving technologies do not necessarily have to lead to a rebound effect. Provided that the side effects are known to the companies and are considered in the planning.
4. Research has shown, that the rebound effect can be independently neutralized or alleviated by companies and at the same time an increase in the profitability of the company is still possible.

## Testing of Hypotheses

**H1** The share of resource revenues in GDP has no influence on the HDI value and thus, on the socio-economic development of a country classified as a rentier state.

**Result:** The hypothesis was rejected.

**H2** Integration of corporate sustainability measures results in increased overall resource output and resource consumption through efficiency gains.

**Result:** The hypothesis was confirmed.

**H3** Considering demand elasticity and consumer behaviour enhances effectiveness of corporate sustainability measures, thus benefiting socio-economic development.

**Result:** The hypothesis was confirmed.

## **SUGGESTIONS**

In summary, it can be deduced from the studies and research carried out that the provision and analysis of information in the context of socio-economic challenges is an important aspect in ensuring sustainable, environmentally friendly social development. From both a macroeconomic and a microeconomic perspective, it is crucial that states and companies establish reliable and valid control mechanisms in order to counteract undesirable effects such as the rentier state or the rebound effect. Transparent and scientifically sound models can make an important contribution to this by revealing previously unknown consequences and enabling decision-makers to weigh up their actions.

Considering the revealed side effects of resource abundance and the introduction of new technologies, states, confederations of states as well as companies can make the decision to weigh their profit motives against environmental protection. Accordingly, consistent sustainability and resource management can lead to positive and ecologically and economically sustainable development for both the economy and the environment in all aspects of socio-economics examined.

## **PUBLICATIONS**

## **Publications related to the topic of the dissertation**

- 1. Sustainable Development: A Quantitative Analysis Regarding the Impact of Resource Rents on State Welfare from 2002 to 2017**  
[https://doi.org/10.21272/sec.4\(4\).119-131.2020](https://doi.org/10.21272/sec.4(4).119-131.2020)  
SocioEconomic Challenges, Volume 4, Issue 4, 2020 ISSN (print) – 2520-6621, ISSN (online) – 2520-6214
- 2. The Rebound Effect – A Systematic Review of the Current State of Affairs**  
<https://doi.org/10.26417/134nvy47z>  
European Journal of Economics and Business Studies Volume 6, Issue 1, 2020, ISSN 2411-9571 (Print)ISSN 2411-4073 (online)
- 3. An Evaluation of Corporate Sustainability in Context of the Jevons Paradox**  
[https://doi.org/10.21272/sec.4\(3\).46-65.2020](https://doi.org/10.21272/sec.4(3).46-65.2020)  
SocioEconomic Challenges, Volume 4, Issue 3, 2020ISSN (print) – 2520-6621, ISSN (online) –2520-6214

## **Publications not related to the topic of the dissertation**

- 4. The Repercussions of the Digital Twin in the Automotive Industry on the New Marketing Logic**  
<https://portal.issn.org/resource/ISSN/2601-8667>  
European Journal of Marketing and Economics, Volume 3, Issue 3, ISSN 2601-8659 (Print) ISSN 2601-8667 (Online), 2020
- 5. A Review of Contemporary Challenges in Business Culture**  
<https://doi.org/10.51137/ijarbm.2021.2.1.1>  
International Journal of Applied Research in Business and Management, Vol. 2, Issue 1, 2021
- 6. Impact of sustainability on the strategic direction of luxury companies. A qualitative analysis of guideline-based expert interviews**  
European Journal of Economics and Business Studies  
Vol. 2 / Issue 1, pp. 01-12, June 2021  
ISSN: 2700-8983

<https://doi.org/10.51137/ijarbm.2021.2.1.1>

**7. Motivation Factors in Organisational Change**

Volume 5 / Issue 3, 2021, pp. 16-28

ISSN (print) – 2520-6621, ISSN (online) – 2520-6214

[https://doi.org/10.21272/sec.5\(3\).16-28.2021](https://doi.org/10.21272/sec.5(3).16-28.2021)

**Conducted Conference Presentations**

**1. Inspire, Qualify, Empower: Join Digital Future With Us**

Die erste Konferenz des iDA, Digitale Transformation als Chance für den deutschen Mittelstand, Online konferencia,

Aachen, FH Aachen (2021) pp. 1-16. Paper: ppt, 16 p. (2021)

<https://ida.fh-aachen.de/ida-con/>

**2. The Rebound Effect: A Critical and Systematic Review On The Current State Of Affairs**

In: Diána, Koponicsné Györke; Róbert, Barna (szerk.) Abstracts of the International Conference on Sustainable Economy and Agriculture Kaposvár, Magyarország : Kaposvár University (2019) 153 p. pp. 101-101. , 1 p.

<https://m2.mtmt.hu/gui2/?mode=browse&params=publication;30920559>

## REFERENCES

- A. Greening, L., Greene, D. L., & Difiglio, C. (2000). Energy efficiency and consumption — the rebound effect — a survey. *Energy Policy*, 28(6-7), 389–401. [https://doi.org/10.1016/S0301-4215\(00\)00021-5](https://doi.org/10.1016/S0301-4215(00)00021-5)
- Abduaziz, O., Cheng, J. K., Tahar, R. M., & Varma, R. (2015). A hybrid simulation model for green logistics assessment in automotive industry. *Procedia Engineering*, 100, 960–969. <https://doi.org/10.1016/j.pro-eng.2015.01.455>
- Abolhassan, F., & Kellermann, J. (2016). *Effizienz durch Automatisierung: Das Zero Touch-Prinzip im IT-Betrieb*. Springer Fachmedien Wiesbaden. <http://gbv.ebib.com/patron/FullRecord.aspx?p=4441827>
- Alcott, B. (2005). Jevons' paradox. *Ecological Economics*, 54(1), 9–21. <https://doi.org/10.1016/j.ecolecon.2005.03.020>
- Amnesty-International. (2019). *Amnesty report 2019*. <https://www.amnesty.de/informieren/amnesty-report/amnesty-report-2019>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- Azungah, T. (2018). Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal*, 18(4), 383–400. <https://doi.org/10.1108/QRJ-D-18-00035>
- Baráth, L., & Fertő, I. (2017). Productivity and convergence in European agriculture. *Journal of Agricultural Economics*, 68(1), 228–248. <https://doi.org/10.1111/1477-9552.12157>
- Baten, J. (Ed.). (2017). *A history of the global economy: 1500 to the present* (Repr). Cambridge University Press.
- Baumgartner, R. J., & Ebner, D. (2010). Corporate sustainability strategies: Sustainability profiles and maturity levels. *Sustainable Development*, 18(2), 76–89. <https://doi.org/10.1002/sd.447>
- Berkhout, P. H., Muskens, J. C., & W. Velthuisen, J. (2000). Defining the rebound effect. *Energy Policy*, 28(6-7), 425–432. [https://doi.org/10.1016/S0301-4215\(00\)00022-7](https://doi.org/10.1016/S0301-4215(00)00022-7)
- Biewendt, M. (2018). *The human development index (hdi) as a reflection of resource abundance (using nigeria and Norway as a case study)*. Edinburgh Napier University, Edinburgh, Scotland.

- Binswanger, M. (2001). Technological progress and sustainable development: What about the rebound effect? *Ecological Economics*, 36(1), 119–132. [https://doi.org/10.1016/S0921-8009\(00\)00214-7](https://doi.org/10.1016/S0921-8009(00)00214-7)
- Birol, F., & Keppler, J. H. (2000). Prices, technology development and the rebound effect. *Energy Policy*, 28(6-7), 457–469. [https://doi.org/10.1016/S0301-4215\(00\)00020-3](https://doi.org/10.1016/S0301-4215(00)00020-3)
- Boeckh, A., & Pawelka, P. (Eds.). (1997). *Staat, Markt und Rente in der internationalen Politik*. VS Verlag für Sozialwissenschaften; Imprint. <https://doi.org/10.1007/978-3-322-97078-7>
- Boland, M. J. (2014). Milk proteins: The future. In *Milk proteins* (pp. 571–583). Elsevier. <https://doi.org/10.1016/B978-0-12-405171-3.00021-0>
- Brooks, S., Wang, X., & Sarker, S. (2010). *Unpacking Green IT: A Review of the Existing Literature*. <https://aisel.aisnet.org/amcis2010/398/>
- Buhl, J., & Acosta, J. (2016). Work less, do less? *Sustainability Science*, 11(2), 261–276. <https://doi.org/10.1007/s11625-015-0322-8>
- Buluş, A., & Topalli, N. (2011). Energy efficiency and rebound effect: Does energy efficiency save energy? *Energy and Power Engineering*, 03(03), 355–360. <https://doi.org/10.4236/epe.2011.33045>
- Camilleri, M. (2014). Advancing the sustainable tourism agenda through strategic CSR perspectives. *Tourism Planning & Development*, 11(1), 42–56. <https://doi.org/10.1080/21568316.2013.839470>
- Camilleri, M. A. (2017). Corporate sustainability and responsibility: Creating value for business, society and the environment. *Asian Journal of Sustainability and Social Responsibility*, 2(1), 59–74. <https://doi.org/10.1186/s41180-017-0016-5>
- Chan, D. S. (2003). Simulation modelling in virtual manufacturing analysis for integrated product and process design. *Assembly Automation*, 23(1), 69–74. <https://doi.org/10.1108/01445150310460114>
- Chitnis, M., & Sorrell, S. (2015). Living up to expectations: Estimating direct and indirect rebound effects for UK households. *Energy Economics*, 52, S100–S116. <https://doi.org/10.1016/j.eneco.2015.08.026>
- Clark, V. L. P. (2010). *Designing and Conducting Mixed Methods Research, -2nd ed (9781412975179)* (2nd edition). Sage Publications.
- Cook, M. A. (1970). *Studies in the economic history of the Middle East edited by M.A. Cook: From the rise of Islam to the present day*. Oxford U.P. <http://gbv.eblib.com/patron/FullRecord.aspx?p=4217902>
- Davis, J. B., & Dolfisma, W. (2008). *The Elgar companion to social economics*. Edward Elgar. <https://www.elgaronline.com/view/9781845422806.xml>

- Dornfeld, D., Yuan, C., Diaz, N., Zhang, T., & Vijayaraghavan, A. (2013). Introduction to green manufacturing. In D. A. Dornfeld (Ed.), *Green manufacturing* (pp. 1–23). Springer US. [https://doi.org/10.1007/978-1-4419-6016-0\\_1](https://doi.org/10.1007/978-1-4419-6016-0_1)
- Dornfeld, D. A. (Ed.). (2013). *Green Manufacturing*. Springer US. <https://doi.org/10.1007/978-1-4419-6016-0>
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130–141. <https://doi.org/10.1002/bse.323>
- Easterby-Smith, M., Thorpe, R., & Jackson, P. (2015). *Management and business research* (5th edition). SAGE.
- Eberling, E., & Dütschke, E. (2020). *Reboundeffekte und Moral Licensing bei der Leuchtmittelwahl: Eine experimentelle Untersuchung*. Kurzbericht (24 No. 1). *Umweltpsychologie*. <http://www.umps.de/php/artikel-details.php?id=719>
- Eigner, M., & Stelzer, R. (2013). *Product-Lifecycle-Management: Ein Leitfaden für Product-Development und Life-Cycle-Management* (2., neu bearb. Aufl.). VDI. Springer.
- Elliot, S. (2007). Environmentally sustainable ict: A critical topic for is research?, 114. <https://aisel.aisnet.org/pacis2007/114>
- Erek, K., Loeser, F., Schmidt, N.-H., Zarnekow, R., & and Kolbe, L. M. (2011). Green it strategies: A case study-based framework for aligning green it with competitive environmental strategies, 59. <https://aisel.aisnet.org/pacis2011/59>
- Etzion, D. (2007). Research on organizations and the natural environment, 1992-present: A review. *Journal of Management*, 33(4), 637–664. <https://doi.org/10.1177/0149206307302553>
- Etzioni, A. (2014). *Moral dimension: Toward a new economics* (1. paperback ed.). Free Press.
- Etzioni, A. (2016). *Socio-economics: Toward a New Synthesis*. Taylor and Francis.
- Feng, W., & Cameron, K. (2007). The green500 list: Encouraging sustainable supercomputing. *Computer*, 40(12), 50–55. <https://doi.org/10.1109/MC.2007.445>
- Financial-Times. (2020). *Financial times online*. <https://www.ft.com/content/3f3f75c4-9d0c-11e7-8cd4-932067fbf946>
- German-Federal-Statistical-Office. (2019). *Desatis: statistisches bundesamt*. <https://www.destatis.de>

- Gillingham, K., Rapson, D., & Wagner, G. (2015). The rebound effect and energy efficiency policy. *SSRN Electronic Journal*. Advance online publication. <https://doi.org/10.2139/ssrn.2550710>
- Goldthau, A. (Ed.). (2017). *Handbook of global policy series. The handbook of global energy policy*. Wiley Blackwell.
- Guest, G., & Fleming, P. (2015). Mixed methods research. In G. Guest & E. E. Namey (Eds.), *Public health research methods* (pp. 581–614). SAGE. <https://doi.org/10.4135/9781483398839.n19>
- Gylfason, T. (2001). Natural resources, education, and economic development. *European Economic Review*, 45(4-6), 847–859. [https://doi.org/10.1016/S0014-2921\(01\)00127-1](https://doi.org/10.1016/S0014-2921(01)00127-1)
- Hahn, T., & Scheermesser, M. (2006). Approaches to corporate sustainability among german companies. *Corporate Social Responsibility and Environmental Management*, 13(3), 150–165. <https://doi.org/10.1002/csr.100>
- Haq, M. u. (1995). *Reflections on human development* [Pbk. ed.]. O.U.P.
- Hazem, B., & Luciani, G. (1987). *The Rentier state. Nation, State, and integration in the Arab world: V. 2*. Croom Helm.
- Hedtke, R. (Ed.). (2015a). *Was ist und wozu Sozioökonomie?* Springer VS. <https://doi.org/10.1007/978-3-531-19853-8>
- Hedtke, R. (2015b). *Was ist und wozu Sozioökonomie?* Springer VS. <https://doi.org/10.1007/978-3-531-19853-8>
- Hellmich, S. N. (2017). What is socioeconomics? An overview of theories, methods, and themes in the field. *Forum for Social Economics*, 46(1), 3–25. <https://doi.org/10.1080/07360932.2014.999696>
- Herring, H., & Roy, R. (2007). Technological innovation, energy efficient design and the rebound effect. *Technovation*, 27(4), 194–203. <https://doi.org/10.1016/j.technovation.2006.11.004>
- Herring, H., & Sorrell, S. (2009). *Energy Efficiency and Sustainable Consumption*. Palgrave Macmillan UK. <https://doi.org/10.1057/9780230583108>
- Hertwich, E. G. (2005). Consumption and the rebound effect: An industrial ecology perspective. *Journal of Industrial Ecology*, 9(1-2), 85–98. <https://doi.org/10.1162/1088198054084635>
- Hofmeier, R. (Ed.). (2004). *Beck'sche Reihe: Vol. 1569. Kleines Afrika-Lexikon: Geschichte, Politik, Kultur* (1. Aufl.). Verlag C.H. Beck.
- Hopkins, M. (2004). Corporate social responsibility: An issues paper. *SSRN Electronic Journal*. Advance online publication. <https://doi.org/10.2139/ssrn.908181>

- Horváth, P., Isensee, J., & Michel, U. (2011). „Green controlling“ – bedarf einer integration von ökologischen aspekten in das controlling. In C. Romeo (Ed.), *Integriertes umweltcontrolling: von der stoffstromanalyse zum bewertungs-* (pp. 41–50). Gabler. [https://doi.org/10.1007/978-3-8349-6844-9\\_2](https://doi.org/10.1007/978-3-8349-6844-9_2)
- Jevons, W. S. (2016a). *The coal question: An enquiry concerning the progress of the Nation, and the probable exhaustion of our coal-mines* (Nachdruck der Ausgabe von 1865). Hansebooks GmbH.
- Jevons, W. S. (2016b). *The coal question: An inquiry concerning the progress of the nation and the probable exhaustion of our coal mines* (Nachdruck der Ausgabe von 1866). Hansebooks GmbH.
- Kirchner, F. (Ed.). (2016). *Philosophische Bibliothek: v. 500. Wörterbuch der philosophischen Begriffe* (1st ed.). Meiner.
- Kitchenham, B. (2004). *Procedures for performing systematic reviews*. Keele, United Kingdom.
- Kopfmüller, J., Luks, F., & Siebenhüner, B. (2007). 20 jahre brundtlandbericht. *Ökologisches Wirtschaften - Fachzeitschrift*, 22(1). <https://doi.org/10.14512/oew.v22i1.495>
- Kramer, M. (Ed.). (2010). *Integratives Umweltmanagement: Systemorientierte Zusammenhänge zwischen Politik, Recht, Management und Technik*. Gabler.
- Lewis, W. A. (2006). *The theory of economic growth* (Digital printing). *Routledge library editions - economics: Vol. 7*. Routledge.
- Liang, T.-P., & Turban, E. (2011). Introduction to the special issue social commerce: A research framework for social commerce: *international journal of electronic commerce*, 2.
- Lillywhite, R. (2010). Footprinting methods for assessment of the environmental impacts of food production and processing. In *Environmental assessment and management in the food industry* (pp. 255–271). Elsevier. <https://doi.org/10.1533/9780857090225.3.255>
- Mallett, R., Hagen-Zanker, J., Slater, R., & Duvendack, M. (2012). The benefits and challenges of using systematic reviews in international development research. *Journal of Development Effectiveness*, 4(3), 445–455. <https://doi.org/10.1080/19439342.2012.711342>
- Marks, N., & Murphy, M. (2006). *The happy planet index: An index of human well-being and environmental impact*. Friends of the earth. New economic Foundation (nef). <http://www.neweconomics.org/gen/uploads/dl44k145g5scuy453044gqbul1072006194758.pdf>

- Mathu, K. (2019). Green supply chain management: A precursor to green purchasing. In S. Abdul Rehman Khan (Ed.), *Green practices and strategies in supply chain management*. IntechOpen. <https://doi.org/10.5772/intechopen.87158>
- McMillan, K., & Weyers, J. D. B. (2007). *How to write dissertations & project reports. Smarter study guides*. Pearson Prentice Hall.
- McRae. (2019). *Sciencealert: energy-saving led lighting has backfired in a spectacular way*. <https://www.sciencealert.com/light-emitting-diode-light-pollution-global-increase>
- Mikl-Horke, G. (2015). Was für eine Ökonomie ist die Sozialökonomie/Sozioökonomie? Begriffsverwendungen in Geschichte und Gegenwart. In *Sozialökonomie - ein zukunftsprojekt* (pp. 13–53). Metropolis-Verlag.
- Mohajan, H. K. (2018). *An Analysis on BCG Growth Sharing Matrix*. Premier University. [https://www.researchgate.net/profile/Haradhan\\_Mohajan/publication/322695566\\_An\\_Analysis\\_on\\_BCG\\_Growth\\_Sharing\\_Matrix/links/5a695f14aca2728d0f5e1b63/An-Analysis-on-BCG-Growth-Sharing-Matrix.pdf](https://www.researchgate.net/profile/Haradhan_Mohajan/publication/322695566_An_Analysis_on_BCG_Growth_Sharing_Matrix/links/5a695f14aca2728d0f5e1b63/An-Analysis-on-BCG-Growth-Sharing-Matrix.pdf)
- Molla, A., Cooper, V. A., & Pittayachawan, S. (2009). It and eco-sustainability: Developing and validating a green it readiness model, *141*.
- Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measuring corporate sustainability. *Organization & Environment*, *27*(2), 113–139. <https://doi.org/10.1177/1086026614526413>
- Murray, J. C. (1891). *An introduction to ethics. CIHM/ICMH Microfiche series = CIHM/ICMH collection de microfiches: no. 34601*. De Wolfe, Fiske & Co.
- Murugesan, S. (2008). Harnessing green it: Principles and practices. *IT Professional*, *10*(1), 24–33. <https://doi.org/10.1109/MITP.2008.10>
- Niehoff, B., Yang, C.-L., & Sheu, C. (2011, January). A comparison of European, US, and asian manufacturing plants on the use of green practices, *30*. [https://www.researchgate.net/publication/235793723\\_A\\_comparison\\_of\\_European\\_US\\_and\\_Asian\\_manufacturing\\_plants\\_on\\_the\\_use\\_of\\_green\\_practices/references](https://www.researchgate.net/publication/235793723_A_comparison_of_European_US_and_Asian_manufacturing_plants_on_the_use_of_green_practices/references)
- Nørgård, J. S. (2009). Avoiding rebound through a steady-state economy. In H. Herring & S. Sorrell (Eds.), *Energy efficiency and sustainable consumption* (pp. 204–223). Palgrave Macmillan UK. [https://doi.org/10.1057/9780230583108\\_10](https://doi.org/10.1057/9780230583108_10)

- Norges-Bank. (2021). *Norges bank investment management*. <https://www.nbim.no/en/>
- Odeyemi, O., & Ogunseitan, O. A. (1985). Petroleum industry and its pollution potential in nigeria. *Oil and Petrochemical Pollution*, 2(3), 223–229. [https://doi.org/10.1016/S0143-7127\(85\)90218-2](https://doi.org/10.1016/S0143-7127(85)90218-2)
- Omodadepo, A. O. (2013). Oil wealth; meat in Norway, poison in nigeria: An analysis of human capital as a transmission channel of resource curse. *Journal of World Economic Research*, 2(3), 39. <https://doi.org/10.11648/j.jwer.20130203.12>
- Onwuegbuzie, A. J., & Leech, N. L. (2005). On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology*, 8(5), 375–387. <https://doi.org/10.1080/13645570500402447>
- OPEC. (2020). *Organisation of the petroleum exporting countries*.
- Pao, H.-T., Fu, H.-C., & Tseng, C.-L. (2012). Forecasting of co2 emissions, energy consumption and economic growth in china using an improved grey model. *Energy*, 40(1), 400–409. <https://doi.org/10.1016/j.energy.2012.01.037>
- Petticrew, M., & Roberts, H. (2012). *Systematic reviews in the social sciences: A practical guide* (12 [Dr.]. Blackwell Publ.
- Polimeni, J. M., & Polimeni, R. I. (2006). Jevons' paradox and the myth of technological liberation. *Ecological Complexity*, 3(4), 344–353. <https://doi.org/10.1016/j.ecocom.2007.02.008>
- Rahman, F., Haq, F., Tabassum, I., & Ullah, I. (2014). Socio-economic drivers of deforestation in roghani valley, hindu-raj mountains, northern pakistan. *Journal of Mountain Science*, 11(1), 167–179. <https://doi.org/10.1007/s11629-013-2770-x>
- Rehman, M. A., & Shrivastava, R. L. (2013). Green manufacturing (gm): Past, present and future (a state of art review). *World Review of Science, Technology and Sustainable Development*, 10(1/2/3), Article 50784, 17. <https://doi.org/10.1504/WRSTSD.2013.050784>
- Romeo, C. (Ed.). (2011). *Integriertes umweltcontrolling: Von der stoffstromanalyse zum bewertungs-*. Gabler. <https://doi.org/10.1007/978-3-8349-6844-9>
- Salzmann, O., Ionescu-somers, A., & Steger, U. (2005). The business case for corporate sustainability. *European Management Journal*, 23(1), 27–36. <https://doi.org/10.1016/j.emj.2004.12.007>
- Santarius, T. (2015). *Der Rebound-Effekt: Ökonomische, psychische und soziale Herausforderungen für die Entkopplung von*

*Wirtschaftswachstum und Energieverbrauch. Wirtschaftswissenschaftliche Nachhaltigkeitsforschung.*

- Saunders, H. D. (2008). Fuel conserving (and using) production functions. *Energy Economics*, 30(5), 2184–2235. <https://doi.org/10.1016/j.eneco.2007.11.006>
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th ed.). Pearson Education.
- Sayeed, L., & Gill, S. (2009). Implementation of green it: Implications for a dynamic resource, 381. <https://aisel.aisnet.org/amcis2009/381>
- Schaltegger, S., Freund, F. L., & Hansen, E. G. (2012). Business cases for sustainability: The role of business model innovation for corporate sustainability. *International Journal of Innovation and Sustainable Development*, 6(2), Article 46944, 95. <https://doi.org/10.1504/IJISD.2012.046944>
- Schmermbeck, H. (2019). On making a difference: Towards an integrative framework for green it and green is adoption. In T. Bui (Ed.), *Proceedings of the Annual Hawaii International Conference on System Sciences, Proceedings of the 52nd hawaii international conference on system sciences*. Hawaii International Conference on System Sciences. <https://doi.org/10.24251/HICSS.2019.248>
- Schmidt-Bleek, F. (2014). Der faktor 10. In F. Schmidt-Bleek (Ed.), *Wieviel umwelt braucht der mensch? mips -- das maß für ökologisches wirt-schaften* (1st ed., pp. 159–176). Springer Basel. [https://doi.org/10.1007/978-3-0348-5650-8\\_6](https://doi.org/10.1007/978-3-0348-5650-8_6)
- Schmutter, K., Nash, M., & Dovey, L. (2017). Ocean acidification: Assessing the vulnerability of socioeconomic systems in small island developing states. *Regional Environmental Change*, 17(4), 973–987. <https://doi.org/10.1007/s10113-016-0949-8>
- Schrader, C., & Vollmar, B. H. (2013). *Green Controlling: ein wesentlicher Schritt auf dem Weg zur nachhaltig orientierten Unternehmensführung*. PFH Private Hochschule Göttingen. [https://www.pfh.de/fileadmin/Content/PDF/forschungspapiere/green\\_controlling\\_ein\\_wesentlicher\\_schritt\\_auf\\_dem\\_weg\\_zur\\_nachhaltig\\_orientierten\\_unternehmensfuehrung\\_schrader\\_Vollmar\\_fp\\_2013\\_04.pdf](https://www.pfh.de/fileadmin/Content/PDF/forschungspapiere/green_controlling_ein_wesentlicher_schritt_auf_dem_weg_zur_nachhaltig_orientierten_unternehmensfuehrung_schrader_Vollmar_fp_2013_04.pdf)
- Scopus. (2019a). *Corporate sustainability: Journal and conference paper*. <https://sus.cir-mcs.e.corpintra.net/results/results.uri?numberOfFields=0&src=s&clickedLink=&edit=&editSaveSearch=&origin=searchbasic&authorTab=&affiliationTab=&advancedTab=&scint=1&menu=search&tablin=&searchterm1=Corporate+sustainability&field1=TITLE&date>

- Scopus. (2019b). *Green it: Journal and conference paper*. <https://sus.cir-mcs.e.corpintra.net/results/results.uri?numberOfFields=0&src=s&clickedLink=&edit=&editSaveSearch=&origin=searchbasic&authorTab=&affiliationTab=&advancedTab=&scint=1&menu=search&tablin=&search-term1=Green+IT&field1=TITLE&dateType=Publication>
- Scopus. (2019c). *Green manufacturing: Journal and conference paper*. <https://sus.cir-mcs.e.corpintra.net/results/results.uri?numberOfFields=0&src=s&clickedLink=&edit=&editSaveSearch=&origin=searchbasic&authorTab=&affiliationTab=&advancedTab=&scint=1&menu=search&tablin=&search-term1=Green+Manufacturing&field1=TITLE&dateType=>
- Scopus. (2019d). *Rebound effect: number of conference and journal papers of the rebound effect*.
- Scopus. (2019e). *Sustainability controlling: Journal and conference paper*. <https://sus.cir-mcs.e.corpintra.net/results/results.uri?sort=plf-f&src=s&st1=Sustainability+Controlling&st2=Controlling&sid=4e8bfa53cb15fe29d3e55b9ac76fb689&sot=b&sdt=b&sl=33&s=TITLE%28Sustainability+Controlling%29&origin=searchhistory&txGid=3836fe2adf911>
- Small, K., & van Dender, K. (2007). Fuel efficiency and motor vehicle travel: The declining rebound effect, 2. <https://doi.org/10.2307/41323081> (The Energy Journal).
- Sorrell, S., & Dimitropoulos, J. (2008). The rebound effect: Microeconomic definitions, limitations and extensions. *Ecological Economics*, 65(3), 636–649. <https://doi.org/10.1016/j.ecolecon.2007.08.013>
- Sorrell, S., Dimitropoulos, J., & Sommerville, M. (2009). Empirical estimates of the direct rebound effect: A review. *Energy Policy*, 37(4), 1356–1371. <https://doi.org/10.1016/j.enpol.2008.11.026>
- Sorrell, S., Gatersleben, B., & Druckman, A. (2018). *Energy sufficiency and rebound effects*. University of Surrey, UK. [https://www.energysufficiency.org/static/media/uploads/site-8/library/papers/sufficiency-rebound-final\\_formatted\\_181118.pdf](https://www.energysufficiency.org/static/media/uploads/site-8/library/papers/sufficiency-rebound-final_formatted_181118.pdf)
- Staff of CGI Consulting & Hamburg Süd (2019, March 1). Interview by Marcel Biewendt. Hamburg.
- Statista. (2019). *World energy consumption*. Statista. <https://de.statista.com/statistik/daten/studie/239764/umfrage/weltweiter-stromverbrauch/>

- Swathi, S. D., & Srikanth, S. K. D. (2014). *Green MANUFACTURING TECHNOLOGIES – A REVIEW*.  
<https://doi.org/10.13140/RG.2.1.3257.1126>
- Szigeti, C., Toth, G., & Szabo, D. R. (2017). Decoupling – shifts in ecological footprint intensity of nations in the last decade. *Ecological Indicators*, 72, 111–117. <https://doi.org/10.1016/j.ecolind.2016.07.034>
- Szirmai, A. (2015). *Socio-economic development*. Cambridge University Press.
- Tonelli, F., Evans, S., & Taticchi, P. (2013). Industrial sustainability: Challenges, perspectives, actions. *International Journal of Business Innovation and Research*, 7(2), Article 52576, 143. <https://doi.org/10.1504/IJBIR.2013.052576>
- Torvik, R. (2009). Why do some resource-abundant countries succeed while others do not? *Oxford Review of Economic Policy*, 25(2), 241–256. <https://doi.org/10.1093/oxrep/grp015>
- Trochim, W. M. K., & Donnelly, J. P. (2008). *Research methods knowledge base* (3rd ed.). Atomic Dog/Cengage Learning.
- UNDP. (1999-2019). *The human development report CD-ROM: Human development statistical database ; full text HDRs*. UNDP.
- United-Nations. (1987). *Report of the world commission on environment and development: Our common future*. United-Nations.
- van Marrewijk, M. (2003a). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, 44(2), 107–119. <https://doi.org/10.1023/A:1023383229086>
- van Marrewijk, M. (2003b). Multiple levels of corporate sustainability. *Journal of Business Ethics*, 44(2), 107–119. <https://doi.org/10.1023/A%3A1023383229086>
- Vlek, C., & Steg, L. (2007). Human behavior and environmental sustainability: Problems, driving forces, and research topics. *Journal of Social Issues*, 63(1), 1–19. <https://doi.org/10.1111/j.1540-4560.2007.00493.x>
- Westkämper, E., Spath, D., Constantinescu, C., & Lentjes, J. (2013). *Digitale Produktion*. Springer Berlin Heidelberg. <https://doi.org/10.1007/978-3-642-20259-9>
- World Bank. (1990-2019). *Gdp, gdp per capita, resource rents in % of gdp and hdi index points of different countries in the year of 2017 to 2019*. World Bank. <https://datatopics.worldbank.org/world-development-indicators/>; <http://hdr.undp.org/en/countries>
- World Bank. (2002-2017). *Gdp, gdp per capita, resource rents in % of gdp and hdi index points of different countries in the year of 2017 to 2019*.

- World Bank. <https://datatopics.worldbank.org/world-development-indicators/>; <http://hdr.undp.org/en/countries>
- World Bank. (2018). *Gdp of nigeria and Norway (2018)*. World Bank. <https://datatopics.worldbank.org/world-development-indicators/>
- Yates, D. A. (1996). *The rentier state in Africa: Oil rent dependency & neocolonialism in the Republic of Gabon* (1. print). Africa World Press.
- York, R., & McGee, J. A. (2016). Understanding the jevons paradox. *Environmental Sociology*, 2(1), 77–87. <https://doi.org/10.1080/23251042.2015.1106060>