

Developing the Inclusive and Sustainable Innovation Index (ISII): A Novel Framework for Evaluating Innovation Practices on Inclusiveness and Sustainability

T Dakshinamurthy^{1*}, Dr. M. Sankar², Emily Maria K Jose³

^{1*} Assistant Professor Xavier Institute of Management and Entrepreneurship, Bangalore
India. dakshina@xime.org <https://orcid.org/0009-0001-8937-6295>

² Associate Professor Knowledge Institute of Technology, Kakapalayam, Salem. sankarobu@yahoo.co.in

³ Assistant professor Xavier Institute of Management and Entrepreneurship emilymariakjose4u@gmail.com

***Corresponding Author:- T Dakshinamurthy**

*Assistant Professor Xavier Institute of Management and Entrepreneurship, Bangalore
India. dakshina@xime.org <https://orcid.org/0009-0001-8937-6295>

Abstract:

The concept of innovation is vital for the advancement of both the economy and the society as a whole. Unfortunately, the orthodox measures of innovation still fail to recognize and capture important aspects which are inclusivity and sustainability. This article suggests ISII for Inclusive & Sustained Innovation Index ISII, a new model created with the objective of evaluating as well as improving the practices of innovation which are inclusivity and sustainability. The environment and inclusion, and how such innovations promote development objectives over a longer term are integrated into how such innovations are justified from the perspective of development on the social, environmental and economic aspects. Furthermore, the key aspects of studying ISII as a methodology, its main structural elements and their effects are presented while applying ISII for the needs of decision making concentrated on the stimulation of innovations including sustainability aspects.

Key Words: Innovation , Inclusivity, Sustainability, Index, and Inclusivity and sustainability Innovation

Introduction:

In this era of technology advancement where competition is rampant, the need to create new ways of working that are both inclusive and sustainable is of utmost importance. The Inclusive and Sustainable Innovation Index (ISII) seeks to fulfill this obligation by providing a framework within which the innovation practices can be assessed from the inclusion and sustainability standpoint. Coupled with the increasing need to curb the wide disparities created by new technologies the ISII has been developed. The ongoing development circumstances and the emphasis on sustainability focuses an inclusive and a balanced approach to innovation. This explains why in this document there are available index and detailed information on how to gauge how innovation system is operating in regard to the factors indicating innovations or rather innovation creation with the absence of the developmental and collaborative aspects. This paradigm not only assists in addressing deficits and challenges therein but also provides direction on how best to nurture an inclusive and sustainable innovation swirling around policies, organizations, and stakeholders.

Literature Review:

This literature review considers such existing indexes and their relevance to the newly proposed Inclusive & Sustained Innovation Index (ISII). The GII, Global Innovation Index is the most used metric to measure the inputs, processes and outcomes of national innovation systems. In relation to Dutta et al(2022), GII measures the innovation capacity using several variables such as institutional frameworks, human capital or knowledge production. Innovation in any country can be understood through GII as Dutta et al,(2022). It is every country towards technology capture, lacks or crafts successful projects.

The GII Global Innovation Index, come up with a scale to measure to what extent the countries can innovate. A normalization approach to an index such as the index of innovation where relative comparison is encouraged shall allow determination of the index of innovation. Calculation of the Index is based on straightforward mathematics, as the mean

for all the score awards in two sub-indices – the Innovation Input Index & the Innovation Output Index comprised of 5 and 2 pillars respectively. Description of each of these pillars refers to one component of the innovation and consists of up to 5 indicators which score from the weighted average method.

The Global Green Economy Index (GGEI) focuses on measuring the performance of countries in transitioning to a green economy. The GGEI Report (2021) stated that this index evaluates environmental performance, policy frameworks as well as the incorporation of green technologies into national economies. According to the GGEI Report (2021), economic development must be compatible with ecological sustainability

It must be noted that the GGEI explores only four aspects climate change & social equity, sector decarbonisation, markets & ESG investment and environmental health. Inaugurated in 2010 as the inaugural green growth index, it is still today the most referenced product in the context of policy making, international organizations, ESG investors and corporates who seek to link strategies with expectations from the national green economy performance.

As the title suggests, this index seeks to determine the effect of innovations on social and economic inclusivity. For instance, Inclusive Innovation Index Report (2018) proposes that index based on-inclusive innovation ‘needs to engage with ignored communities’. Therefore, this index demonstrates how innovation clearly demonstrates positive correlation with reduced equality and improved social benefits.

Inclusiveness Index, indicates the extent to which all sections of society are taken into account in the economic and social order. It is helpful in evaluating innovation practices from the angle of inclusivity. The Inclusiveness index is an intergovernmental measure for states in multinational countries. It is an intergovernmental measure of inclusiveness of societies that scan histories not only across ethnoracial lines of experience such as ethnicity, sex, and gender and religion but also other indicators such as political participation, inequality, incarceration, and immigration, among others.

The Sustainable Development Index (SDI) is a measure that comprises of several components such as economic, environmental, and social performance (Hák, Janoušková, & Moldan, 2016). It gives a composite picture of the sustainable development of a populace, which helps to make comparisons and measure advancement over time (the United Nations Development Programme [UNDP], 2020). Conversely, the Inclusive and Sustainable Innovation Index (ISII) examines how the practices of innovation themselves foster inclusivity and sustainability. The ISII is distinct from the SDI, as the latter evaluates whether there is progress in the efforts towards achieving the sustainable development goals; the former assesses how innovation fosters equity and protects the environment (Sachs, Schmidt-Traub, & Kroll, 2019). The ISII includes such indicators that measure how inclusively innovation objectives are implemented as well as how these objectives support sustainable development goals explaining the role of innovation in equitable and sustainable development (Kroll & Voss, 2021). On the one hand, the SDI aims at deciding the overall progress made in achieving sustainability, whereas on the other hand, the ISII considers the determinants of these achievements, and more specifically, innovative practices that can bring about improvement in economic performance, environmental protection and social justice objectives (World Bank, 2020).

Gap Analysis And Need For New Index

Analysis of the literature and undertaking secondary data reviews, we have come across some areas in the current indices that need improvement. Social inclusiveness and equity continue to be ignored in many existing indices as most focus on the component of economic development and environmental protection. For example, the Global Innovation Index (GII), focuses on innovation, lacks considerations on the depth of sustainability and inclusion. And sometimes, data unavailability can be a very big hindrance where some regions make these indices unable to be generalized as reliable or comparable. Hence most of the existing measures are broad and do not critical examine dimensions upon an innovation such as societal responsive normative infrastructure, environmental and other resultant wider effects. Also, there is a significant gap in the indices that are both-inclusive to the wider society and holistic in nature thus warrants the searching of a more effective model.

As a result, this creates a gap therefore there exists a necessity for new index for integrating inclusiveness and sustainability. Because not all Sustainability measures will even be necessarily inclusive at the same time promoting policies that may fill inclusivity may not be a good idea long in duration. Thus being social in nature does not automatically mean that it is consistent with environmental protection policies as the value of targeted investment towards green technologies does not guarantee that the returns will favor the poor sections. However, even though there are such highly developed green economies there are still certain groups of people working in green economy job industries living

in poverty or even wage disparity based on level of incomes for developing countries Green Growth-All Economics Indicators may suggest that enhancement took place. This is, however, devoid of the realities of rural slum or low-income households. Another general factor used for studies purposes is ISII index which seeks to address the broadcast of the implications of innovations across different societal classes towards economic and environmental enhancement. Existing Inclusive Indexes tend to focus on the existing societies with socio-economic systems on how inclusion and equity are achieved.

Advantages of Creating a New Indicator

The Inclusive and Sustainable Innovation Index (ISII) has several advantages which can promote research, policy or practice to high levels. It permits geo-customization which means that most aspects of the analysis can be structure for a particular research question or policy problem. More information than in indices is provided by the ISII because of its combining indices giving an overall view on sustainability and inclusivity. This allows for extensive evaluation of the relationships among various aspects through discovering of possible conflicts or coexistences. The ISII encourages the development of original tools for counting which measure sustainability, inclusion or the social responsibility of business in new ways. Furthermore, the index provides policymakers with suggestions on how to improve the situation and identifies priorities for investment in the field of sustainable and inclusive development, which facilitates the making of evidence-based policy. It helps organizations in integrating corporate social responsibility with their business strategies by allowing organizations to make well informed choices on environmental and community affecting projects. For theorists, the ISII provides a coherent structure within which scholars can investigate the relationship between innovation, sustainability and inclusiveness. Last but not the least, it increases the general public understanding of the necessity of economic development and at the same time upholding social justice and environmental sustainability for a better society.

Objectives Definition

Objectives: Create a new Inclusive and Sustainable Innovation Index (ISII) with ten parameters, each parameter assigned a weightage of ten. This index specifically focuses on the Inclusion of different layers of the society within the country and especially looks at Innovation from the viewpoint of its sustainability to the environment. Here's step by step process of design and implement ISII

ISII – Parameter – Combined Inclusiveness and Sustainability system of ten factors

Innovation for Inclusiveness and Sustainability

Key Components:

1. Supportive Infrastructure

Financial support, grants, and investments focused on fostering innovations which are inclusive and sustainable are all present. b. Infrastructure Development: availability of both physical and digital infrastructure including innovation centers, technology parks, and internet suitable for creation and growth of sustainable and inclusive innovations.

2. Collaborative Networks:

Networks of governments, businesses, experts, academia and non profits, which seek to foster inclusivity and sustainable innovation. b. Knowledge Sharing: Consumers within the innovation ecosystem are provided an opportunity to learn about best practices, research evidence, and successful models that promote inclusivity and sustainability through innovation.

3. Policy And Regulation:

Supportive Policies: Program or systems that create incentives for the creation of innovations that can have a positive effect such as social innovation or environmental friendly innovations or any other of inclusivity nature. The degree to which the current regime can revision the existing regulation and promote the use of new technologies within the framework of enhancing the sustainable development Goals.

4. Training and Capacity Building:

Learning and Teaching: Existence of educational programs, training programs whose objective is to enhance knowledge and practices related to sustainability and inclusive development. This includes support for STEM, vocational education, business. Techniques that are aimed at raising the abilities of various groups of individuals including the disadvantaged or the marginalized sections of the society to enable them participate and contribute towards the growth of the innovation ecosystem.

5. Inclusive Market Access and Scalability:

Achieving Inclusive Market Access: Policies and strategies that are drafted to ensure and equitable distribution of the market levers for innovations by disadvantaged groups in order to center them in the economy. For scaling up innovations that tackle critical social or environmental issues, offer access to scalability support platforms, business incubation facilities, and other related services.

6. Evaluating Outcomes on Social Impact

Assessing the Societal Impact of Innovation: This refers to the evaluation of the contribution of a firm's innovation activities to such features of a society such as education, poverty alleviation, health and equity within a society. This requires framing innovation activities of the firm in more social terms by positioning the outcomes within the principles of ISII.

7. Measuring Outcomes on Environmental Improvement

The various metrics used to analyze the environmental impacts that arise from these innovative ventures with regards to the resource utilization efficiencies being embraced with regards to waste creation and other environmental concerns such as carbon emissions can be analysed.

8. Equity In access

Evaluate the reach of internet access and the availability of technology for the public, ensuring that all demographic groups benefit. Highlight how these resources empower disadvantaged populations to keep up with technological advancements. Assess the cost of technology relative to average incomes, considering the diverse financial situations of different income groups. This helps demonstrate how technology can be made accessible to everyone, promoting equity in access.

9. Global Partnerships: A section should integrate on country contribution to international cooperation in matters innovation for sustainability and inclusion.

10. Innovation Culture and Mindset

This factor seeks to the investigate and define the existing attitude, values and behaviors that act within the boundaries of a country's innovation system but this time exploring different aspects. First of all, it analysis the risk-taking attitude and the propensity to hard work, asking how failure as an approach is received and whether there are attempts to learn from it rather than being defeated by it. Second, it examines the scope of collaboration sharing within the partnership, checking the movements of knowledge, wisdom and resources among various sectors and forms of institutions. Third, it states the importance of significance of advancement of innovation systems stressing on building systems that are viable and adaptable to change. It examines the ethical dimensions of performing innovation, including ways of embedding ethics in the process of innovation. The sources of data for this analysis may include surveys of attitudes towards innovation, parameters of collaboration, reports on resilience of integrative systems, and ethics in the industry and academia.

Sources of Data:

In order to thoroughly delve into the aspects influencing the innovation picture of a country with regard to inclusivity and sustainability, a number of data sources are going to be employed. These materials include questionnaires filled out by the experts of innovation, sustainability and inclusivity from numerous countries, and reports about the community impact studies by different parties. Among other resources, some documents will include the environmental impact assessment (EIA) reports and evaluation reports (audits) done before the implementation of the projects. Such reports on Corporate Social Responsibility (CSR) and sustainability will provide relevant information on social and environmental issues. Green technology adoption studies as well as studies on the transfer of technology will be useful in providing information relating to the uptake of sustainable technologies. Policy analysis will include the assessment of the policies of governments and agencies at both national and regional levels with regards to innovation, sustainability and inclusiveness. Questions directed towards entrepreneurs, researchers, policymakers, and other users of the research subject will be employed in order to extract feedback regarding the innovation system. The assessment of innovation would also contain impact reports including case studies or evaluation of social or environmental impact done by specific innovations/programs. For these purposes, existing research and data collection will be combined with seeking collaboration with the UN, OECD, World Bank and other authoritative organizations to obtain their data and expertise, relevant reports, mass media materials, academic literature, etc.

Trend analysis and issue identification will be effective through social media analysis, while citizen science projects will provide exposure to the threats or social problems. Finally, quantitative data collection through global surveys will be useful as it elaborates on the qualitative aspects out of concern.

Quantitative Data Collection for parameters IISC

1. Supportive Infrastructure for Inclusivity and Sustainability

Funding and Resources: Evaluate the total value of R&D costs in a macroeconomic perspective of GDP, the total amount of venture capital transactions as well as government funding for projects of new ideas on inclusion and sustainability. Assess how these monetary means are allocated towards various sustainable innovations.

Infrastructure Development: Examine the status and distribution of innovation centers and technology parks, broadband Internet coverage and People's level of digitalized culture, interlinking these aspects with social equity ideals. Emphasize in what ways these resources enable the environment such that technological advancement trends towards sustainability.

2. Policy and Regulation

Supportive Policies: Investigate the extent to which the regulatory environment is innovation-friendly with regards to inclusivity and sustainability considerations. This includes evaluation of support policies such as availability and effectiveness of tax holidays for research and development in such areas.

Regulatory Framework: portray the ease in business registration and the general climate for doing business with regard to the concern of the needs of the considerations for inclusion and sustainability and how these could enhance or block achievement of the goals.

3. Cross-Sector Partnerships

Study the nature and the impact of cross-sector partnerships, known as industry-academia-government collaboration or public-private partnerships, designed specifically for innovations in inclusion and sustainability. Evaluate what factors make such collaborations successful in fulfilling a wider range of needs and meeting sustainable development goals.

Knowledge Sharing: Evaluate the amount and the effect of registration and licensing of inventions, publication of scientific works, and product development agreements designed towards achieving inclusivity and sustainability. Determine how these forms of knowledge diffusion are effective in achieving equitable and sustainable technology.

4. Capacity Building

Education and Training: Investigate the availability of educational opportunities by looking at the proportion of the population that holds STEM degrees, looking at vocational training programs. Examine how the programs assist various segments of the society, especially focused skills and sustainability.

Skill Development: Examine the rate of employment for the skewed population of innovation workers in sustainability-related jobs. This to include looking at how various gaps in skill development programs will target the enhancement of the employment of these groups of people.

5. Market Access and Scalability

Inclusive Market Access: Evaluate market opportunities and sizes for products developed by disadvantaged sectors of society, including aspects such as market opportunities and satisfaction between different buyer segments or age groups. Evaluate the role of these factors in promoting financial inclusion and provide fairness in access to markets, Products developed for underserved markets.

Scalability Support: Investigate how ventures especially those led by deprived groups are able to scale up and enable multiple economic activities. Examine the scope of such employment creation and wider economic and social benefits especially through new enterprises seeking to bring about novel ideas that are sustainable. This includes assessing in what ways do such ventures enhance or stand to be enhanced by engagement with wider socioeconomic and cultural processes.

6. Impact Assessment on Social Improvements

Measure the consequences of innovations on society focusing on how social equity is enhanced for example in alleviating poverty, education and health measures among others. Illustrate how these innovations are able to be inclusive in reducing inequalities and improving the standards of living for the marginalized segments of the society.

7. Impact Assessment on Environment

Measure the outcomes of innovation by focusing on environmental protection. This includes measuring the adopted strategies on the per capita degree of carbon emission, rate of using the alternative energy, and the percentage reduction

of wastage and investigating how such technological advancement further aids the green economy and sustainable development

8. Equity in Access

Technology Accessibility: Measure how far reached the internet penetration and how many points of access to technology are being made available to the public type of the assessment that looks at how well these help every demographic group. Explain how these assets support such inclusiveness in a way that disadvantaged populations are empowered to cope with the advancement of technology.

Assess technology costs in relation to the average population income and look for ways in which those affordability factors consider diversity. This way shows how different income classes are able to make use of the technology which encourages equity of access to technology.

9. Global Partnerships

Study the achievement of external relations with other countries or global organizations and concentrate on the aspect of encouraging innovation in these collaborations emphasizing sustainability and inclusiveness. Explain how such ties help in tackling complex challenges as well as bringing fresh ideas from different angles into the innovation process.

10. Innovation Culture and Mindset

Surveys and Assessments: Peripheral themes that limit the risks that radiate from resilience attitude towards risk-taking, people's level of risk of mobilization from exposure in collaboration, and their comprehensiveness of risk taking urging focus on the integration of those that enhance inclusivity and sustainability through long-term perspectives. Explain how the values of inclusion and integration of diverse opinions feature in these aspects of culture.

Patent Analysis: Tracing the innovation paths by studying the patent portfolio and understanding its complexion diversity. Emphasis on how patents assist in development with inclusivity and sustainability in mind, and if the process of such inventions embraces diversity.

Final ISII Index

Understanding the development of the Index. 1. Definition of Indicators: Establish measure able parameter for each of the criteria or paramater in order to design integrated dimensional structure. 2. Data Collection: Only primary and secondary data that are obtained from reliable sources such as surveys, reports, studies and so forth. 3. Weighting and Scoring: In what way should the weights be distributed among the various levels and facets of the hierarchy with respect to the overall intensity of the dimensions? It may cover invention of scoring systems for each dimension as well. 4. Integration of Index Calculation: There are existing conventional frameworks for determining an Index by employing Qualitative and Quantitative Integration. This may include the usual averaging of scores obtained in the score calculation or forming a composite with various or most weighted components 5. Validation: The assessment of the reliability of the index through a small scale test and feedback from stakeholders and other users. 6. Reporting and Use: The conclusions are the published index results and insights as well, who's views are treated as the stake holders and finding out ways to disseminate best practices and policies enhancements. 7. Testing and Validation. Phase of pilot testing: Make an attempt to operationalize what has been developed usually on the ISII framework but in limited number of countries or organizations so that final corrections may be made depending on the results. Validation process: Within the validity mechanism, using the comparison of the index of inclusive innovation with other indexes that mean but do not mean the same level of indexing as that of inclusive innovation.

Publication & Use

Methods and means for documentation : The documentation in here is detailed enough explaining how such figures were arrived at calculations regarding assumptions , methods which were used in getting them and also the information banked on therein .

Dissemination the level of distribution : The fact that these results must reach out to all users inclusive of the policy makers and the public through different media means and they should be able to convey and use them while marketing their other ideas who can promote these things as well .

ISII indulges in the use of both qualitative and quantitative measures of capturing as much innovations as possible towards sustainability and integration which leads to a more effective and fairer designed innovation.

Conclusion

Inclusiveness and Sustained Innovation Index (ISII) seeks to address the gaps in existing measurements by offering a comprehensive tool that evaluates the contribution of innovation to both sustainable growth and social inclusion. Unlike other indices that focus on specific aspects of these elements, the ISII provides a holistic perspective, integrating innovation, sustainability, and social inclusion into a unified framework. This broader approach is essential for shaping equitable societies that are not only inclusive but also more resilient and sustainable in the long term.

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