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Approaches to sustainability appraisal of livelihoods: A systematic review

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Abstract

This paper critically reviews the approach and methods of sustainable livelihood on the basis of 25 high-impact and highly relevant articles meeting inclusionary criteria. It presents a comparative assessment of different sustainable livelihood approaches advanced by organizations such as Oxfam, CARE, UNDP and DFID each being developed in a chronological order and upgrading successive approach by incorporating new ideas and methods. The study identifies the lack of a proper empirical method for assessing sustainability of livelihoods. Thus, this study adds to Sustainable Livelihood Security Index (SLSI) into the DFID framework for better assessment of sustainability of livelihoods. Two more indices are incorporated into the original SLSI for a more realistic measurement of sustainability.

Keywords: *Sustainable livelihood, SLSI, DFID framework, sustainable livelihood approaches.*

Introduction

Livelihood sustainability is essential to promote social well-being and ensure environment protection and economic stability. It is crucial to reduce poverty, foster inclusive development and build communities resilient to climate change. Unsustainable livelihood practices can cause overuse of resources leaving lesser options for the future. A sustainable livelihood must be endurable environmentally, economically and socially. A livelihood practice with changing environment, economic and social conditions, may change from being sustainable to becoming unsustainable through time particularly in the context of climate change, global political unrest and social instability

The livelihood concept and its related terminologies began to emerge in the mid-1980s and early 1990s. A comprehensive definition of sustainable livelihoods by Chambers and Conway (1991) was used as a basis of livelihood analysis to different development agencies and Non-Governmental Organizations, engaged with issues like poverty and food security. Sustainable Livelihood Approaches (SLAs) were developed by different institutes such as Institute of Development Studies (IDS), Overseas Development Institute (ODI), government department like British Department for International Development (DFID), followed by diverse non-governmental organizations like Oxfam (Oxford Committee for Famine Relief) and CARE (Cooperative for Assistance and Relief Everywhere), and development agencies like Food and Agriculture Organization (FAO),

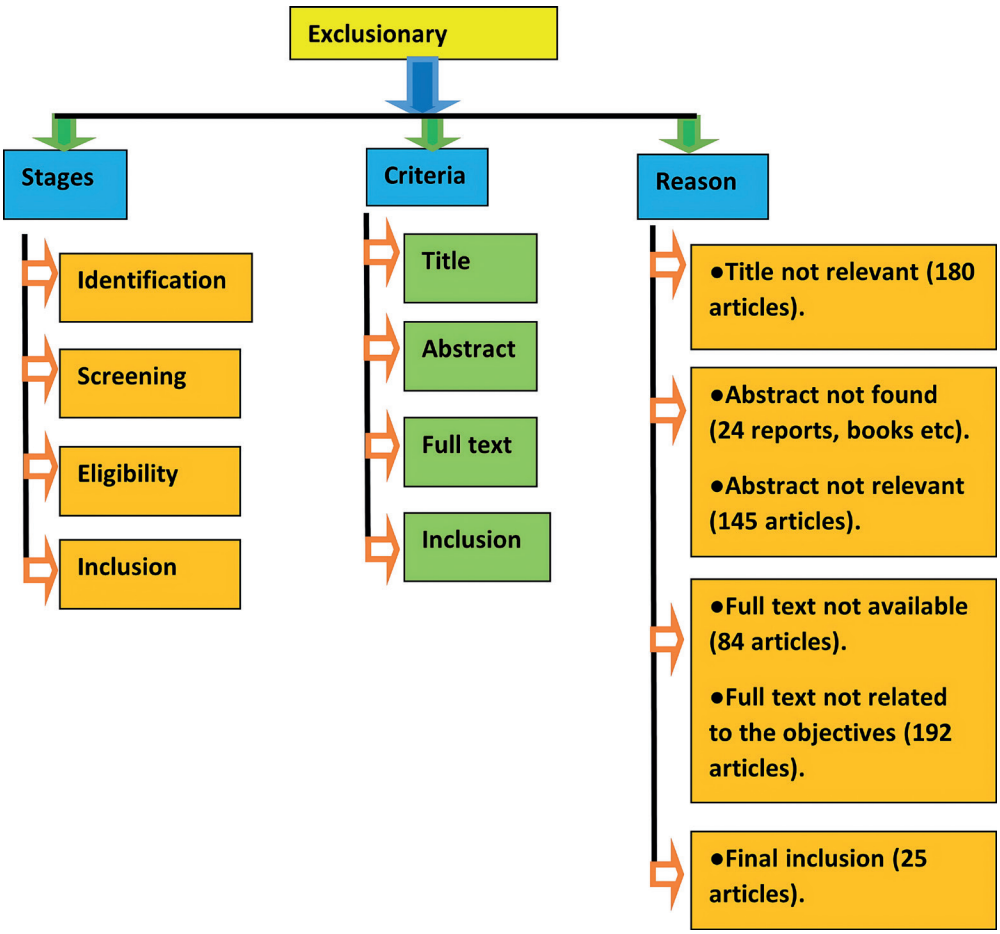

Fig. 1: Exclusionary process adopted for this study.

United Nations Development Programme (UNDP), and so forth. That was the period of paradigm shift in the concept of development and associated purviews, intentions and prime concerns where contrasting views were intensely debated by the scholars. The SLA focussing primarily on the poor was drafted under the 'intentional' or 'interventionist' approach of development under which developmental programmes and projects were framed by non-government and government organizations to assist and support the poor (Cowen and Shenton, 1998; Morse and McNamara, 2013). In 1980s there was a shift in focus on food security at national to household level which targeted improving the conditions of the poverty-stricken households. During the last two decades of twentieth century, the scholars widened their viewpoint from food security to livelihood security (Frankenberger, Drinkwater, & Maxwell, 2000).

The primary objective of livelihood analysis and development of analytical framework for livelihood studies by the

aforementioned institutes and organizations was to address and eradicate poverty. The experience and lessons learned at the ground while implementing projects for development and to ease the state of poverty, livelihood analysis at the household level was identified as the most effective tool to identify capabilities and needs of the targeted group which in turn assist in the formulation of appropriate mechanism. The Sustainable Livelihood Framework (SLF) is the resultant analytical tool used by development agencies and organizations as well as by social science researchers. However, a systematic review of literature on sustainable livelihood approaches reveals that the SLF in its many variants lack components that can integrate the analysis to give an overall assessment. This review tries to add a component to the existing framework to enable empirical and quantitative assessment of livelihood status of a community.

Objectives

The main objectives of this study are:

a. To catalogue different SLAs and its associated concepts found in the journals, books and reports available on open-access platforms.
b. To modify the sustainable livelihood analytical framework in order to make it suitable for assessing the status of sustainability of livelihood.

Methods

Search terms and procedures

Google scholar (First ten pages for each keyword and key phrases) and Research Gate databases are utilized to identify and select available literature. Google scholar is a search engine that focuses on research based scholarly articles, books, technical reports and theses. It collects information on academic literature from different sources including digital libraries like JSTOR. Research Gate is a networking site of scientists, researchers and academicians where they share their works. From April, 2020 to April, 2021, the following keywords and key phrases were used to search for relevant literature: Sustainable livelihood*, SLSI*, DFID* approaches*, sustainability* and sustainable livelihood framework*.

Inclusionary criteria

The articles available in Research Gate data bases and Google Scholar search engine were considered for the study. An inductive approach is employed to select the articles for review and to achieve the objectives mentioned above. Initially, all the papers with important keywords were searched from which articles that focused on SLAs and livelihood frameworks are included. In addition, articles that outlined a particular method or a methodology were included.

Exclusionary criteria

The articles excluded at the first step were based on the irrelevance of the title of 180 articles. These titles were not primarily related to livelihood or to sustainability content. In the second step, abstracts were not found for 24 reports and books and 145 abstracts reflected contents that do not assist in achieving the objectives of the present study. In the third stage full texts were not available for 24 articles in Google Scholar or Research Gate. Thus, only 217 articles with full text were considered. Final inclusion was on the basis of quality, novelty and application to real world context. Out of 217, only 25 were found to align with the core objectives

of the study. After comprehensive reading of the articles, 25 of them met inclusionary criteria and were retained for review (Fig. 1). These 25 studies include Carney, *et al.* (1999) Chambers (1983), Chambers and Conway (1991), Conway (1985), Cowen and Shenton (1998), D'Silva and Raza (1980), DFID (1999), (Flora 1992), Frankenberger, Drinkwater and Maxwell (2000), Hatai and Sen (2008), May, *et al.* (2009), Morse and McNamara (2013), Sajjad and Nasreen (2016), Sajjad et.al.(2014), Saleth (1993), Saleth and Swaminathan (1993),Scoones (1998), Serrat (2017), Singh and Hiremath (2010),Solesbury (2003) UNDP (2017), IFAD (n.d.), Alinovi, *et al.* (2010), (Krantz) 2001 and Carney (1998).

Comparative analysis of SLA and SLF

The concept of Sustainable Livelihoods Approach (SLA) concerns with the livelihoods of the poor and detects the limitations and amplifying factors relating and influencing livelihood opportunities (Serrat, 2017). SLA mainly incorporates two components: 'framework' and 'principles'. A framework is a conceptual platform while 'principles' are the set of regulations. The different sustainable livelihood approaches though differ in terms of their methods and methodology, the components of the approaches are alike. The major constituents within 'framework' are assets and capabilities (or 'capital'), context, policies, institutions and processes (also known as transforming structures and processes), livelihood strategies and outcomes. Likewise, the key aspects included in 'principles' are: holistic approach, people-centered, strength building, macro-micro links, dynamics, inclusive partnerships and sustainability (DFID 1999).

Robert Chambers in 1983 through his impactful writing on lack of concern of the rich, educated and powerful outsiders towards the poor influenced the thought and approach of the scholars, researchers, development workers engaged with poverty reduction and rural development. He pointed out the bias in allocation of resources in research and development prioritizing betterment of the rich and urban world and neglecting research on soil erosion, the diaorrhea and such social aspects of the rural poor world. He highlighted the importance of local knowledge and participation of the poor in creating effective strategies. In 1980, D'Silva and Raza analysing the impact of integrated approach on rural development in Nigeria found that investing in poor rural population and accepting agriculture as a business had positive impact in shrinking rural-urban gap, decreasing inequalities, enabling inclusive growth, achieving sustainable management of natural resources. This ultimately resulted in sustainable development with food security and nutrition, sustainable agriculture and poverty eradication (IFAD). In 1985, Conway reported 'agroecosystem analysis'- a multidisciplinary and holistic approach in agricultural studies in Thailand that considers productivity, stability, sustainability and equitability as 'system properties'. Chambers and Conway (1991) in their IDS discussion paper-296, proposed the concept of sustainable livelihoods combining capabilities, equity and sustainability. The definition given by these authors became the basis of analytical frameworks for livelihoods used by many agencies and institutions. Cowen and Shenton (1998) in a case study in Kenya, critically analysed the agrarian policies in the context of existing system and structure of the society. Their proposals for agrarian doctrine did not use the term livelihoods but focused on household production. In 1998, Scoones in an

IDS working paper outlined a framework for sustainable livelihoods analysis incorporating the criteria specified in the definition of SL given by Chambers and Conway. This analytical framework has become the basis of all frameworks used by different development agencies and other institutions. Flora (1992) argued for the adoption and implementation of 'farming systems research and extension method' for promoting sustainable agriculture by empowering the farmers. Carney in 1998 highlighted that promotion of SLA can help in eradicating rural poverty by DFID through improving access to assets, strengthning structures and processes, identifying vulnerabilities and promoting holistic and sustainable development.

After reviewing 25 selected literature, four main SLAs emerged which have been widely accepted for their convincing applicability in the real world context. These are developed by Oxfam, CARE, UNDP and DFID. Oxfam came into existence in the year 1993. The Sustainable Livelihoods Handbook of Oxfam by May, Brown, Cooper and Brill (2009) sets the guidelines for applying SLA as a means of understanding poverty. Oxfam's SLA was to recognise assets and capabilities of households which was in contrast with the traditional need-based approach of anti poverty works. The organisation employed 14 tools to have household level information, positive and negative impacts of life events, asset base, coping livelihoods strategies, strengths and barriers of the strategies, public assets, micro-macro relationships, power dynamics and so on. On the basis of the status of these, households were placed at different levels of 'livelihood ladder', on which the level of sustainability of households was determined. The lowest level of the ladder is 'surviving' with unsustainable livelihoods. Livelihoods become sustainable with ascent to next level that is 'coping', becoming increasingly sustainable with further ascent to 'adapting' and 'accumulating' and vice versa. A key concern in SLA of Oxfam was to find gender issues, more specifically household power relations, and access to assets. Oxfam's main purpose was to bring poverty ridden people from surviving stage to thriving stage and therefore finding livelihood solution through proper intervention (May, Brown, Cooper, & Brill, 2009).

CARE was first founded in 1945 with a mission to fight global poverty and social injustice. CARE had several analytical lenses to understand poverty, but in 1994 it adopted Household Livelihood Security (HLS) considering it more comprehensive to analyze causes, dynamic and complex relationships of factors and processes of poverty situation. The focus of the organization shifted to build capabilities of the individuals and households to secure their food requirement. CARE has an analytical framework for household livelihood security, in addition to which there are frameworks to identify problems and opportunity, for programme design, implementation and evaluation; to identify sources of risks to livelihoods and finally a design frame for livelihood projects. The final aim was to have improved livelihoods.

UNDP has been involved with the conceptual development of livelihood framework since the beginning and has adopted the approaches of Chambers and Conway, 1991; DFID, 1999; Norton and Foster; 2001 and Thennakoon, 2012 in implementing and preparing guiding principles for development projects across various countries (UNDP, 2017). UNDP

proposed a tool of qualitative valuation of each capital of livelihood framework on the basis of perception of the stakeholders of the targeted community of a development project. The qualitative values are point based and therefore act as quantifier, ranges of which are used to assess sustainability of livelihoods. The projects under UNDP targeted those capital or assets which deserved intervention for sustainable livelihoods (UNDP, 2017).

DFID was founded by the British government in the year 1997 with the motive to promote development and reduce poverty. It developed a sustainable livelihood framework in the year 1999 which included the vulnerability context, assets pentagon, transforming structures and processes, livelihood strategies and livelihood outcomes. All these aspects worked in unison to explore sustainable livelihoods. The vulnerabilities such as shocks, trends and seasonality faced by the poor people could be eradicated with the help of available and accessible assets with them like human, social, natural, physical and financial by means of some government or private policies, laws, institutions; adopting some strategies to achieve livelihood outcomes like more income, increased well-being, reduced vulnerabilities, improved food security and more sustainable use of natural resources (DFID, 1999).

These SLAs have been analyzed by many experts from the related fields. Carney *et al* (1999) made a comparative analysis of all the four approaches adopted by CARE, Oxfam, UNDP and DFID. In relief development activities CARE focused on livelihood promotion, livelihood protection and livelihood provisioning. The distinctive feature of CARE was emphasis on security rather than sustainability of household livelihoods. In SLAs of the four agencies, sustainability was understood in terms of social, economic, environmental and institutional perspectives. Analysis procedure incorporated identification of livelihood constraints, institutional, economic and partnership analysis, role of policies, modern sciences and investment opportunities on livelihoods (Carney *et al*, 1999). The review of Carney *et al* (1999) did not discern assessment of sustainability of livelihood by any of these agencies. Krantz (2001) while comparing SLAs of UNDP, CARE and DFID found differences in application of the approaches in project implementation and programming. To him DFID applied the approach for analysis while CARE and UNDP used the approach as a procedure for programming. In spite of an encompassing concept, Krantz identified weaknesses of the SLA as lacking a method to identify poor, disregarding social relations and power dynamics and gender aspects. Solesbury (2003) narrated the evolution of SLA from research to practice since the publication of the white paper on international development in 1997 and finally DFID's adoption as a strategy for making policy for the poor.

In a detail review of the SLA, Alinovi *et al* (2010) considered it as a useful tool to understand livelihoods and poverty and its essentialness in social and economic research on poverty and food security. To find household resilience to food insecurity in Kenya, they combined household and resilience analysis. By applying SLA in Igalabad of Central Nigeria, Morse and Mcnamara (2013) could identify poorest and wealthiest among the surveyed households, but found it difficult to consider a village sustainable or unsustainable. The significance

of SLA in generating local knowledge for proper intervention to assist the community has been emphasized by these authors. Serrat (2017) commented that SLAs are giving new directions to policy assessment where complicated issues related to poverty are being organized and channelized to highlight local perspectives and priorities. He identified the strengths of SLF as ability to accentuate linkages between macro and micro levels and between sectors, to comprehend different modes of livelihood in an evolutionary and historical perspective and to focus on different livelihood activities' relations and social relations. The weaknesses of SLF are presuming capital assets can be dilated universally and progressively, understating vulnerability context elements like macroeconomic trend and conflict, overlooking inequalities of power and disparaging the reality of strengthening one group of livelihood weakens another group.

All the approaches discussed above have more commonalities than differences as all of them developed around the same time borrowing ideas from each other and presenting it in better version than the previous one. The DFID framework was the last and could borrow the best concepts from the previous approaches while adding newer concepts to develop sustainable livelihood framework. Moreover, its framework is the most resilient one as it is applicable in diverse geographies. The prime distinctions between CARE and DFID are that the former concentrates more on HLS and ignores environmental context and transforming structures and processes which are very much parts of the DFID's approach. Likewise, UNDP uses adaptive strategies whereas DFID uses transforming structures and processes. Oxfam's approach is decentralized in its application and thus results in diverse and distinct application of their programmes globally. In other words, Oxfam's approach does not have a fixed framework whereas DFID's approach has a particular framework which helps in maintaining uniformity in application.

Appraisal of sustainability

Appraisal of livelihoods in terms of sustainability may facilitate identifying the vulnerabilities and formulating appropriate policy measures. In the face of combining effects of growing spatial inequality, social injustice and climate change; indigenous livelihood practices tend to be unsustainable. In West African Sahel countries, climate change has made traditional livelihood practice unreliable and compelled the rural people to search for alternatives (Sissoko *et al*., 2010). Application of SLA to understand climate risk in Africa by Kogachi and Shaw (2023) have found that the adaptive capacity of the farmers and pastoralist of Sahel region to climate shocks is low and there exists conflict over uses of natural resources. The study concludes that the existing policy and initiatives are not appropriate to address the livelihood issues of the region. However, lack of application of indices to assess the sustainability limits the study to grasp comparative level of economic, social and environmental facets of (un)sustainability.

Sustainable Livelihood Security Index (SLSI) developed by Saleth and Swaminathan (1993) may be considered a suitable measure to assess sustainability of livelihoods in quantitative terms. SLSI is more comprehensive in terms of livelihoods than other contemporary development indices like Human Development Index (HDI)

introduced by UNDP in 1990. The inability of HDI to incorporate ecological footprint of development has led to the development of Sustainable Development Index (SDI) (Hickel, 2020). Similarly, Multidimensional Poverty Index by OPHI and UNDP originally developed in 2010 is now considered an important index to measure achievement of SDGs particularly making it relevant to SDG 1, 2, 3, 4, 6 ,7 and 11. SLSI on the other hand is specific to livelihood assessment covering three pillars of sustainability.

Analytical framework with sustainability assessment

There is little disagreement on SLA of DFID to be the all-encompassing one. However, it is true that DFID's framework lacks a quantifiable method of sustainability assessment. In order to overcome this limitation in DFID approach, the elements of the SLSI by Saleth and Swaminathan (1993) can be incorporated into DFID framework for quantitative assessment. The SLSI has numerous applications in conjunction with the DFID's framework for livelihood study (Saleth 1993; Saleth and Swaminathan, 1993). Based on successful application of this method by Hatai and Sen (2008), Singh & Hiremath (2010), Sajjad, Nasreen, & Ansari, (2014) Sajjad & Nasreen (2016) it is considered imperative to add SLSI into DFID's framework for quantitatively assessing livelihoods.

The SLSI developed by Saleth and Swaminathan (1993) originally comprised Ecological Security Index (ESI), Social Equity Index (SEI) and Economic Efficiency Index (EEI). After the review of all the above literatures, the importance of institutional support such as policies and the structural base like sanitation facilities, distance to educational institutions is considered significant in terms of achieving livelihood sustainability. Considering this, two more indices- Institutional Support Index (ISI) and Structural Outcome Index (SOI) are added to the original SLSI which may enable to assess the sustainability of livelihoods quantitatively at varying spatial levels.

The versatility of the SLSI can be understood with one of the reviewed works. Assessment of farm-level agricultural sustainability using site-specific indicators and sustainable livelihood security index by Sajjad and Nasreen (2016) used cropping intensity, number of livestock per household, eco-friendly agricultural practices as ESI; per capita food grain production, net irrigated area, use of chemical fertilizer, available farm machineries as EEI; literacy, average age of the farmer, access to the nearest primary health centers, access to safe drinking water within the household, per capita land availability as SEI. This shows that the applicability of the SLSI is manifold and the indicators can be chosen as per availability of the data in a particular area. Sajjad and Nasreen (2016) measured agricultural sustainability, so the indicators chosen by them reflect agriculture. Regional variations too can be incorporated by region specific indicators allowing flexibility in arriving at an index that is context sensitive. Another advantage of the SLSI is that the indicators need not be of same unit of measurements. In addition, Sajjad et. al. (2014) assessed the spatio-temporal variation in agricultural sustainability using SLSI for Vaishali district of Bihar, India, which revealed the performance and changing status of the blocks of Vaishali district in terms of sustainable development of agriculture. The study helped in identifying

the blocks which needed immediate action to balance environmental and socio-economic development of the region. Hatai and Sen (2008) studied agricultural sustainability in Orissa using SLSI. Singh and Hiremath (2010) found SLSI to be the most simple, flexible and comprehensive index to measure livelihood security for a prolonged period in rural areas, supporting sustainable development and mutual concerns of varied fields by offering holistic perspectives for planners, development workers and administrators.

In figure 2, the livelihood section represents various components of DFID's sustainable livelihood framework including livelihood assets, vulnerability context, transforming structures and processes, livelihood strategies and livelihoods. It is to be noted that the framework is not a replica of the current world reality. The vulnerability context of the DFID's livelihood framework includes the vulnerabilities that affect livelihoods of people. It can be in the form of shocks, trends or seasonality.

The pentagon of assets (fig. 2) comprising natural (natural resources like land, forests, water, air, biodiversity, etc.), human (such as the skills, knowledge, ability to labor and good health), social (like networks and connections, members of formalized groups, relationships of trust, reciprocity and exchanges), physical (for example affordable transportation, secured shelter, proper water supply and sanitation facilities, information accessibility and clean affordable energy) and financial assets(such as pensions, savings, expenditure, income, etc.) are the bases of the framework. These assets work in union with each other rather than in isolation. It also examines the accessibility of individuals to diverse assets and their potentialities to utilize these assets in a fruitful way. The framework (Fig. 2) evaluates the way in which the institutions, policies and programmes, social and cultural background determines the livelihoods of people by analyzing the factors which regulates the accessibility to assets and the range of most strategies involved in it (Carney 1998).

In the DFID's framework "livelihood outcomes" are the final components which include increased well-being, more income, reduced vulnerability, more sustainable use of natural resource base and improved food security (DFID, 1999). These outcomes however, do not yield a proper quantifiable value and therefore SLSI are added to the framework to quantitatively measure sustainability. The sustainability section of figure 2 depicts the SLSIs and level of sustainability based on the indices. The original SLSI developed by Saleth and Swaminathan has three sub-indices i.e., ESI, EEI and SEI. The last two sub-indices namely ISI and SOI are suggested to be incorporated in the framework to assess sustainability of livelihoods.

The ISI recognizes the roles of the governmental and non-governmental institutions that have synergic effects on livelihood outcomes. The public and private institutional programmes and policies introduced and implemented in a study area (DFID, 1999) can be considered as indicators in this sub index. In the case of India, schemes like mid-day meal, health-card, self-help groups may be considered as sensitive indicators. The indices developed on these indicators identify the impact of the policies and programmes in uplifting the livelihoods of the people.

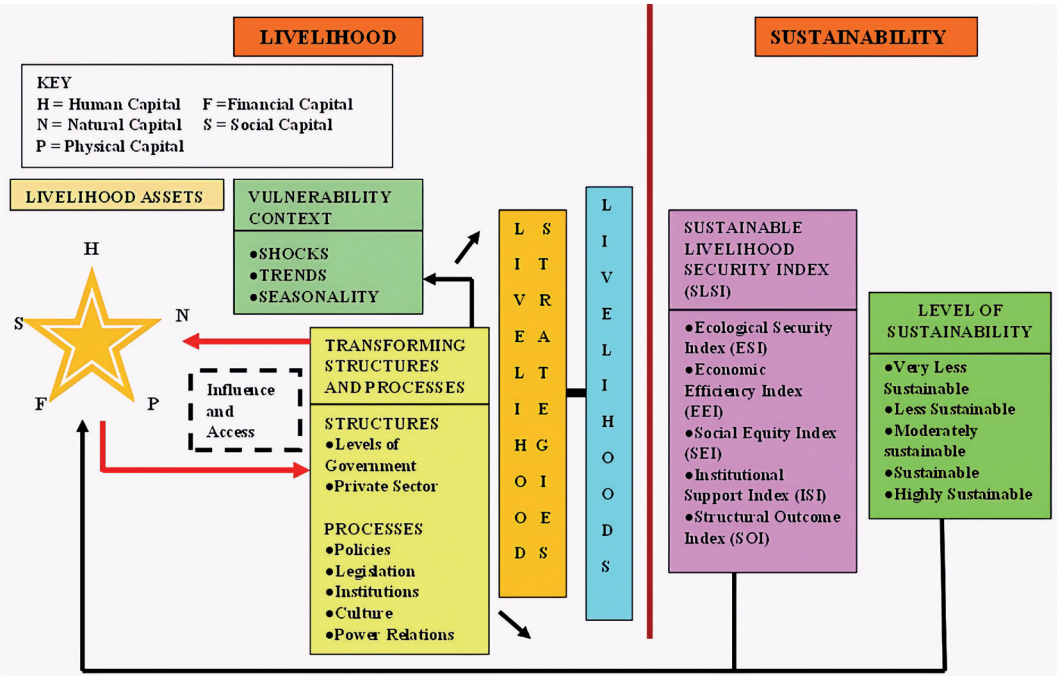

Fig. 2: Incorporating Saleth & Swaminathan's SLSI (1993) into DFID's sustainable livelihood framework (1999) to assess sustainability of livelihoods

The SOI aggregates the rudimentary infrastructure required for supporting livelihoods of people (DFID, 1999). It includes transportation facilities, housing, sanitation, water facilities, clean energy, etc. and accessibility to these services and assets (DFID, 1999). In livelihood upliftment, access to these facilities plays an important role by influencing health and work efficiency. Both ISI and SOI summarize 'transforming structure and processes' component of DFID framework. These two indices can be calculated by following the procedures of ESI, EEI and SEI given by Saleth and Swaminathan (1993). The SOI and ISI may also incorporate the institutional measures adopted to address vulnerability context.

Finally, the level of sustainability is divided into five levels as shown in figure 2 on the basis of the values of the indices. As the range of SLSI is 0 to 1, it is divided into five equal classes (see Das, 2023), each class with different level of sustainability (Guha et. al., 2018).

Conclusion

This critical review identified comparative strengths and weaknesses of different sustainable livelihood approaches forwarded by various organizations at different points of time. The review helped in suggesting further modification to the existing framework for livelihood assessment. The present study made an attempt to merge existing frameworks and quantifiable indices for assessing sustainability of livelihoods by giving an empirical element to the previous qualitative framework of sustainable livelihood framework of DFID. Additionally,

an attempt was made to enhance the SLSI by adding two new indices namely ISI and SOI, to make the SLSI more encompassing in measuring sustainability of livelihoods. However, the added sustainability assessment part to the DFID framework may be validated through empirical studies.

Competing interest

The corresponding author declares that they have no conflict of interest.

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