

1 **Policy planning to achieve sustainable** 2 **development goals for low-income nations**

3 **Abstract:**

4 Methodical planning for formulating sustainability policy is needed to meet
5 the ambitious United Nations Sustainable Development Goals (SDGs). This
6 paper proposes an approach for such planning for low-income nations by
7 systematically dividing the principal sustainability policy into manageable
8 policy categories. These categories encompass all 17 SDGs, enabling
9 policymakers to take into account the complex interlinkages of the SDGs
10 for sustainability planning. Key actions that need to be taken in each policy
11 category to enhance sustainability are then identified. In order to ensure
12 that the planning process is holistic, analysis of the interlinkages of SDGs is
13 carried out based on prioritisation of the relative importance of each Goal.
14 Although the priority of each Goal can be country specific, interlinkages
15 among Goals 1, 7 and 9 are analysed as an example to illustrate the
16 proposed approach. Top-down approach of the UN's global sustainability
17 agenda is integrated with a bottom-up approach of empowering and
18 promoting local knowledge of low-income nations to develop the planning
19 and policy approach presented in this paper. Finally, research gaps are
20 highlighted to support the achievement of sustainability targets and
21 further enhance the benefits of academic research to low-income nations.

22 **Keywords:**

23 United Nations; Sustainable Development Goals; Policy planning; Low
24 income nations; Poverty eradication; Governance
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26 **1 Introduction**

27 The United Nations (UN) has declared 17 Sustainable Development Goals (SDGs)
28 and 169 targets aimed to be met by 2030 (United Nations, 2015). It has recognized that
29 sustainable development cannot be realized without the ending of global poverty and has
30 stated that special attention should be given to low-income nations (United Nations,
31 2015). Here the term 'low-income' used is as per the UN classification of nations (United
32 Nations, 2018). Several approaches for sustainable development have been proposed
33 (Broman et al., 2017; Loorbach, 2010; Jabareen, 2008; Robert, 2010) for the world in
34 general, but there is a need to develop approaches to achieve sustainable development
35 that are exclusively focused on low-income nations as their priorities on socio-economic

36 and infrastructure development policies are different than the developed nations or
37 emerging economies. This is of great importance because although the global average of
38 extreme poverty has been declining over the past few decades (DESA, 2020), the number
39 of people living in extreme poverty in Sub-Saharan Africa has remained fairly constant
40 (Beltekian and Ortiz-Ospina, 2018) and the statistics of decline in the global average of
41 extreme poverty is mainly due to the falling of extreme poverty in China (Weiping, 2018)
42 and India. Furthermore, strategies required for achieving SDGs can be radically different
43 for high-income, middle-income and low-income nations. High-income nations require
44 strategies for carbon footprint reduction whilst maintaining quality of life and social
45 equity. For the middle-income nations, the strategy for sustainable development is mainly
46 focused on maximising energy efficiencies through innovative technologies and
47 processes and improve quality of life through social equity, infrastructure, health and
48 comfort. For low-income nations, sustainability is driven by requirements such as
49 elimination of poverty, job creation, training of unskilled workforce, providing safe
50 shelter and drinking water amongst other issues. The main factors that could either enable
51 or cripple sustainable development in low-income nations have been identified as
52 complex interactions among poverty, climate change, rapid urbanisation and food
53 insecurity (Cobbinah et al., 2015).

54 It has been argued that sustainable development and green growth discourses do not
55 fit the crucial socioeconomic needs of low-income nations (Arif, 2015). This argument is
56 based on the idea that low-income nations cannot afford to implement the policies of
57 sustainable development and green growth because the majority of their citizens live
58 under the poverty line. Similarly, unplanned urbanization and poverty have been reported
59 to be major threats to sustainable development for low-income nations (Cobbinah, 2015).

60 This paper proposes a systematic approach to formulate and implement robust
61 sustainability policies solely focused on low-income nations in order to achieve the
62 SDGs. Firstly, the methodology is described (Section 2) and then the overarching
63 sustainability policy is divided into manageable policy categories and the key actions
64 needed to implement each policy category are suggested (Section 3). Given the pressing
65 need to reconcile sustainable development with poverty alleviation and economic growth
66 in low-income nations, a proposition that the SDGs be ranked based on their relative
67 importance is then made (Section 4). To further refine the policy planning, analysis of
68 interlinkages among three SDGs is carried out by choosing Goals 1 (ending extreme
69 poverty), 7 (ensuring access to sustainable energy), and 9 (building sustainable
70 infrastructure and industries) as illustrative examples (Section 5). Then, main research
71 gaps that need to be addressed to achieve SDGs for low-income nations are highlighted to
72 promote and stimulate academic research in the field (Section 6) and finally conclusions
73 are drawn in Section 7.

74 The main original contribution of this paper is that it provides an easy-to-use planning
75 approach that can be utilised by low-income nations to plan for sustainability without
76 requiring extensive sophisticated resources unavailable to them. Additionally, research
77 directions are set out to maximise the benefits of academic research to low-income
78 nations. This paper aims to bridge the gap between academic research and its utilisation
79 in low-income nations. Therefore, the identified research directions, and evidences and
80 rationale for the approach presented here are based on intense consultations among
81 academics, personnel involved in development sector and citizens of the low-income
82 nations, in addition to literature review.

83 **2 Methodology**

84 The planning approach developed in this paper is based on formal and informal -
85 group discussions with professionals, literature review and the experiences of the authors.
86 The group discussions on sustainability policy planning for low-income nations were
87 initiated at the 5th conference organised by the Society of Nepalese Engineers, UK in
88 2019 and continued throughout 2020 (formal and informal discussions are continuing).
89 Discussions and consultations were held with professionals in the development sector,
90 government officials and academics with the aim of systematizing sustainability planning
91 process. The findings of the discussions were then compiled and supplemented with
92 literature review. Google Scholar and Web of Science were the primary searching tools
93 utilised to conduct literature review by using keywords such as “Sustainable development
94 goals”, “sustainability planning for developing countries”, “low-income nations policy
95 planning” and “sustainability policy framework for poor nations”. The methodology was
96 also guided by the authors’ experiences of working in the development sector of Nepal
97 (one of the least developed nations) and an aim of making the findings of academic
98 research more accessible to low-income nations. Therefore, the methodology attempts to
99 enhance the interaction between research and practical implementation (Zeigermann &
100 Böcher, 2020; Böcher & Krott) to maximise overall benefits.

101 **3 Classification of principal sustainability policy**

102 This paper proposes a novel classification of overarching or principal sustainability
103 policy by recognising that sustainability consists of multiple dimensions, inter alia,
104 politics, society and environment. Critical earth-system processes such as climate change,
105 rate of biodiversity loss, nutrient cycles and environmental pollutions (Griggs et al.,
106 2013) are taken into account to prepare the classification. This classification helps
107 organise the broad sustainability policy into manageable categories so that effective
108 planning can be systematically carried out for each category. Strategic plan for

109 sustainability could be developed at the macro level, which can then be detailed further
110 based on the categories and sub-categories linking to the SDGs individually, which will
111 enable planning, management and monitoring in a methodical manner. Technical
112 expertise and resources for rigorous planning are often lacking in low-income nations and
113 this classification will help in systematically planning for sustainability. The authors
114 could not find similar classification during the literature review and to the knowledge of
115 the authors, such classification may not yet exist in the context of low-income nations.
116 The classification proposed here is a bottom-up template that encourages low-income
117 nations to set their own sustainability priorities, thereby empowering them and at the
118 same time, also supporting the realisation of the SDGs. By encouraging low-income
119 nations to set their own regional/national sustainability priorities, this classification
120 integrates top-down SDGs with bottom-up policies and also enhances the sense of
121 ownership the low-income nations have on global sustainability agenda. It may be
122 pointed out here that this classification supplements SDGs and promotes local adaptation
123 of the SDGs, and in no way is the classification intended to replace SDGs.

124 As recognised by Game et al. (2018), evidence for sustainability policy should be
125 drawn from broader domains – e.g. expert knowledge, health communities etc. – rather
126 than solely relying on standard disciplines.

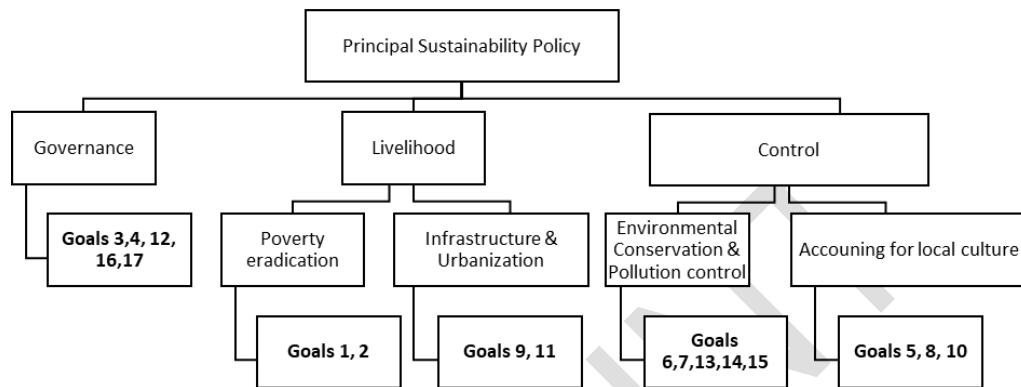
127 The rationale for the policy classification presented below is that it allows
128 governments and policy makers of low-income nations to focus exclusively on their most
129 pressing needs and thus maximise the benefits of their limited resources. The sheer
130 numbers of SDGs and associated targets can be overwhelming to low-income nations and
131 it is anticipated that the classification proposed below will aid in consolidating and
132 prioritising the relevant SDGs in a case-by-case basis. This allows broad SDGs and
133 targets, which are hard to tackle, to be broken into manageable and affordable chunks.
134 While a low-income nation does not have adequate resources to tackle all the SDGs
135 designed for global scale, it may be able to leverage its limited resources to tackle its
136 most pressing and relevant sustainability issues at local scale.

137 Figure 1 shows the classification of overarching sustainability policy (Principal
138 Sustainability Policy) into three categories, namely, Governance, Livelihood and Control,
139 with all seventeen SDGs falling under at least one of these categories. Livelihood
140 category is further sub-divided into ‘Poverty eradication’ and ‘Infrastructure &
141 Urbanisation’ sub-categories. Likewise, the Control category is further sub-divided into
142 ‘Environmental Conservation & Pollution control’ and ‘Accounting for local culture’
143 sub-categories. The scope covered in each of the categories and associated sub-categories
144 and key actions needed to achieve the SDGs goals are presented in the following section.

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Figure 1 Classification of sustainability policy



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152 3.1 Governance policy

153 Governance policy guides the management of top-level government operations.
154 Meadowcroft et al. (2005) point out that governance for sustainability is a future driven
155 continuous process where governments need to address issues such as environmental
156 limits, sustainable resource management and demographics among other things. They
157 also emphasise that multilevel governance and coordination at local, regional, national,
158 international and global scales is crucial where decision-makers remain responsible to
159 citizens, communities and stakeholders. Key requirements for sustainability governance
160 as pointed out by Meadowcroft et al. (2005) could be adapted for low-income nations.
161 Brief summary of key requirements that they have described is provided in Table 1.

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169 **Table 1** Key requirements for sustainable governance (adapted from Meadowcroft et al.
170 2005)

Requirements	Examples
Appropriate political frameworks	Goal identification, monitoring, evaluation and continuous improvement at all levels of governance
A long-term focus	Inter-generational strategies, not a reactive response
Understanding of ecological processes and of social/ ecological interactions	Biodiversity, importance of preserving natural habitats, ecosystem services
Knowledge integration from natural and social sciences into decision making process	Circular economy, climate change, sustainable production and consumption patterns
Use learning processes	Experiment with options, draw lessons from failures

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172 The governance policy for sustainability should embrace the principles of
173 decentralisation and empowering lower level administrations as well as making them
174 accountable. The degree of decentralisation has been found to be much less in low-
175 income nations compared to high-income nation (Olowu, 2003). This implies that the
176 lesser degree of autonomy of local governments in low-income nations affects their
177 growth potential. Sustainability oriented governance policy should ensure and promote
178 decentralization so that local governments can effectively execute local level
179 development projects and programs. For instance, the need to accelerate the
180 decentralization of Cameroon for sustainable development has been highlighted by
181 Kimengsi & Gwan (2017). Since decentralization empowers local communities, it should
182 be a crucial component of governance policy.

183 The lack of accountability of decision-makers in low-income nations is a key factor
184 leading to corruption and malpractices in the implementation of sustainable development.
185 Peace, justice and strong institution is Goal 16 (United Nations, 2015) of SDGs and
186 Transparency International (TI, 2017) has highlighted that SDGs cannot be achieved
187 without tackling corruption. Low-income nations rely heavily on aid from donor agencies
188 for various development initiatives. Although finding exact data is hard and maybe not
189 even possible, corruption on aid money is one of the biggest challenges in poor nations
190 (Kenny, 2017). Donor agencies need to work with governments to develop robust aid
191 flow monitoring mechanisms to understand how and where corruption happens.

192 Furthermore, all levels of governance require focused political will to combat corruption
193 by ensuring transparent and trackable coordination amongst all stakeholders as suggested
194 by Mackey et al. (2018).

195 *3.2 Livelihood policy*

196 A livelihood comprises the capabilities, assets (including both material and social
197 resources) and activities required for a means of living. A livelihood is sustainable when
198 it can cope with and recover from stresses and shocks, maintain or enhance its
199 capabilities and assets, while not undermining the natural resource base (Krantz, 2001).
200 The livelihood policy category includes strategies to tackle major livelihood challenges
201 of low-income nations such as poverty and economic growth. Thus, this policy can be
202 further sub-divided into poverty eradication policy and infrastructure and urbanization
203 policy as discussed below:

204 205 3.2.1 Poverty eradication policy

206 This policy aims to achieve Goals 1 (No poverty) and 2 (Zero hunger) of the SDGs.
207 Approaches to poverty eradication have to be identified on a case by case basis for every
208 nation (possibly detailed to provincial, municipal and local/village level) and be built into
209 the poverty eradication policy. Nevertheless, some key guiding principles that generally
210 apply to majority of middle and low-income nations are: improving agricultural yields,
211 improving non-farm economy and expanding income-earning opportunities (Yanagihara,
212 2003) in general.

213 3.2.2 Infrastructure and urbanisation policy

214 This policy combines two major Sustainable Development Goals of the United
215 Nations, i.e. Industry, Innovation and Infrastructure (Goal 9) and Sustainable Cities and
216 Communities (Goal 11) (United Nations, 2015). Two main purposes of this policy are to:
217 a) guide infrastructural development and expansion and b) direct the urbanization
218 process. As opposed to high-income nations, infrastructure, often built by depleting
219 natural resources, is not highly developed in low-income nations. Therefore, low-income
220 nations have the opportunity to utilize sustainable materials, techniques, and technologies
221 for construction and management of sustainable infrastructure. Therefore, utilization of
222 energy sources and materials that are regenerative and sustainable has to be built into
223 infrastructure planning and policy.

224 Since the populations of middle- and low-income nations are expected to move to
225 urban areas, the United Nations Development Programme (UNDP) has identified

226 inclusiveness and resilience as important factors to promote sustainable urbanization
227 (UNDP, 2016). Therefore, urbanization policy should help improve equality and
228 inclusiveness in cities so that equal opportunities are accessible to all the population.
229 Likewise, a resilient city is able to adapt to changes without compromising its stability
230 and measures that improve city resilience should be a part of urbanization policy
231 (Coaffee et al., 2018; Keen & Connell, 2019; Brakman et al., 2015). Other important
232 factors that should be considered in urbanization policy are approaches to tackle urban
233 poverty and unsustainable modes of transportation. Options such as a car-free city
234 (Nieuwenhuijsen & Khreis, 2016), and electric buses and trams also need to be explored
235 for low-income nations as these options have thus far only been primarily focused for
236 high-income nations.

237 3.3 Control policy

238 Control policy provides regulatory framework to ensure that development and
239 construction works carried out under infrastructure and urbanization policy (see Section
240 3.2.2) ensure sustainability. The Control policy can be further divided into two divisions
241 as discussed below:

242 3.3.1 Policy for environmental conservation and pollution control

243 This policy aims towards achieving Goals 6 (clean water and sanitation), 7 (affordable
244 and clean energy), 13 (climate action), 14 (life in water) and 15 (life in land).
245 Infrastructural development and expansion demand massive consumption of natural
246 resources and energy, which can eventually to lead to severe environmental degradation.
247 Therefore, policy and guidelines need to be developed to control consumption of natural
248 resources while building new infrastructure, as well as expanding existing infrastructure.
249 The policy framework for sustainable urbanization as well as sustainable infrastructure
250 development and expansion should include mandatory sustainability analysis. This
251 analysis should objectively, and possibly quantifiably, measure sustainability by using
252 applicable sustainability indices or metrics while planning infrastructural development or
253 expansion and urbanisation. Carbon footprint, ecological footprint and exergy are some
254 examples of sustainability metrics that could be utilised; however, formulation of new
255 easy-to-use metrics may also have to be done on a case by case basis depending upon
256 practicality. It is noteworthy that low-income nations may not have sufficient resources to
257 perform complex sustainability analyses, especially if the analyses require high skilled
258 manpower and high computational processing.

259 Issues of waste management and pollution control are likely to be critical with the
260 construction and expansion of infrastructure as well as urbanization. Therefore, policies

261 for the optimal management of waste and pollution are required. Adoption of circular
262 economy can be explored to minimize waste, pollution and natural resources
263 consumption. Prospects of circular economy in ensuring sustainable development has
264 been stated by Korhonen et al. (2018) which defines circular economy as economy
265 constructed from societal production-consumption systems that maximizes the service
266 produced from the linear nature-society-nature material and energy throughput flow. This
267 is done by using cyclical materials flows, renewable energy sources and cascading-type
268 energy flow.

269 3.3.2 Policy of accounting for local culture

270 This policy indirectly supports achieving Goals 5 (Gender equality), 8 (Decent work
271 and economic growth) and 10 (Reduced inequalities) of the SDGs. Culture-led
272 development programmes promote greater social inclusiveness and rootedness, resilience,
273 innovation, creativity and entrepreneurship for individuals and communities, and the use
274 of local resources, skills, and knowledge (UNESCO, 2012). On the other hand, ignoring
275 culture can lead to bad policy (Small et al., 2010). Furthermore, culture has been
276 identified as one of the pillars of sustainable development by United Cities and Local
277 Governments (UCLG, 2018). Therefore, cultural beliefs and sensitivities of a community
278 have to be carefully taken into account before formulating any policy on community
279 development.

280 It may be noted that the policy classification proposed here is to help low-income
281 nations either develop their own or identify high-priority UNSTATS indicators and
282 actions (UNSTATS, 2017) most relevant to them. We argue that all low-income nations
283 should be encouraged to identify and adapt the SDGs and their associated targets and
284 indicators depending on the most pressing needs of individual low-income nations. This
285 bottom-up approach of low-income nations proactively developing and identifying their
286 own sustainability agenda will supplement the top-down approach of the United Nations
287 handing the SDGs to low-income nations. Additionally, this bottom-up approach will
288 enable the optimal utilisation of local knowledge and empower low-income nations by
289 actively engaging them in the sustainability planning process.

290 **4 Goals prioritisation**

291 Previous sections of this paper systematically classified the overarching sustainability
292 policy into manageable categories. This allowed detailed planning for implementation of
293 sustainability policy by identifying key actions and measures that need to be taken in
294 each category. Furthermore, all of the seventeen Sustainable Development Goals (SDGs)

295 were assigned to the relevant policy category (refer Figure 1). In this section, we propose
296 that every low-income country prioritize the SDGs by taking local and regional contexts
297 into account. The benefit of such prioritisation is effective planning that enables low-
298 income nations to tackle their most pressing issues. For instance, if one takes a case of a
299 landlocked country like Nepal, Goal number 14 may not be very important because this
300 goal primarily deals with oceans. On the other hand, this Goal could be extremely
301 important to the Republic of Maldives, which is also in South Asia, as the Maldives
302 consists of islands. Furthermore, low-income nations typically have shortages of high
303 skilled manpower, so addressing all the seventeen SDGs with equal priority is not
304 practical. Another benefit of this prioritisation approach is that it allows low-income
305 nations to set their own sustainability priorities and therefore ensures their higher degree
306 of participation and ownership of the global UN agenda. It also empowers low-income
307 nations by giving them more flexibility and leverage. The need for the Goals
308 prioritisation was the main finding of the group discussions.

309 One approach to ensure that the prioritisation of SDGs is robust is to quantify the
310 priority levels of all the Goals. This can be done by simple ranking or assigning a
311 numerical value to each Goal based on its priority for a specific country. Once the
312 prioritisation of the SDGs is done, interactions among high priority goals should be
313 analysed. Such analysis provides valuable insights for planning and policy purposes and
314 also helps to make the complex planning process more manageable. Here, it is
315 noteworthy that all SDGs are interlinked and broad analysis of interlinkages among all of
316 the Goals can be carried out. However, examining only high priority Goals and analysing
317 their interlinkages can be very useful for regional and local-level planning, particularly
318 considering the limitations of resources available to low-income nations. This paper
319 examines Goals 1, 7 and 9 to analyse their interlinkages (Section 5). These goals are
320 mainly chosen as examples for illustration, and similar analyses can be performed with
321 other goals. One motivation for choosing these particular three Goals is that they are
322 generally considered to be major challenges in achieving SDGs (Arif, 2015; Cobbinah et
323 al., 2015) in low-income nations. It has been reported that focusing on Goal 1 can have
324 compound positive effects on all SDGs (Lusseau and Mancini, 2019) and low-income
325 nations such as Ethiopia recognise Goal 7 as a precondition to meet other Goals (Tosun
326 & Leininger, 2017). Likewise, infrastructure (Goal 9) is at the forefront of G20's work to
327 strengthen global growth (OECD, UNDP, 2019).

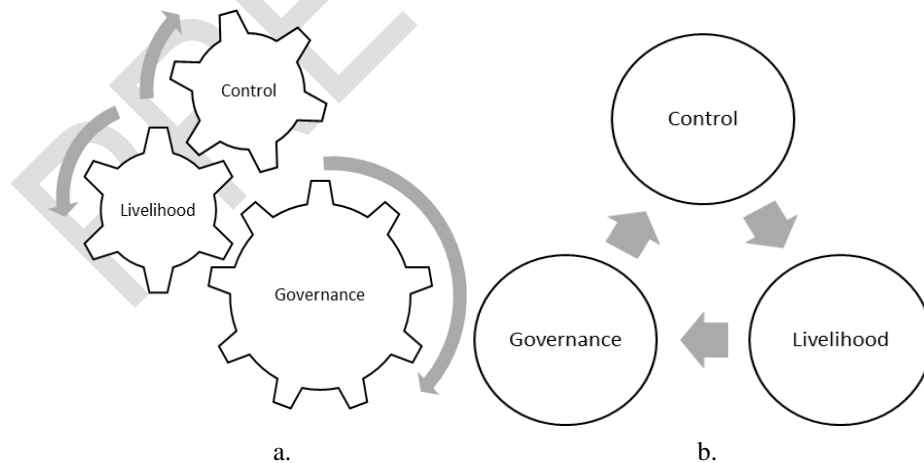
328 **5 Analysis of interlinkages**

329 The analysis of interlinkages between the categories, sub-categories and the SDGs
330 (see Figure 1) is important to ensure that the plans and policies developed for achieving

331 SDGs are harmonious such that a policy that positively impacts one SDG does not
 332 negatively impact other SDGs. Although this might not always be practical, evaluating
 333 impacts of a policy on all other prioritised SDGs rather than only on the Goal intended by
 334 the policy will help in fine tuning the policy to optimise the trade-offs. Figure 2a shows
 335 the interrelationships between the governance, livelihood and control – the governance
 336 being the main enabler for sustainable livelihood, and both of these leading to the need
 337 for setting control policy for environmental protection. It highlights the importance of
 338 sustainable governance policy (see Section 3.1) in ensuring that livelihood enhancement
 339 does not cause negative environmental impacts. Unchecked consumption of natural
 340 resources to maintain livelihood is not feasible in the long-term as scarcity of natural
 341 resources will affect quality of living. Therefore, control policies that ensure conservation
 342 of natural resources while also enabling poverty alleviation are important. The
 343 interrelationships between governance, livelihood and control policies mean that any one
 344 of these policies can affect the other two as shown in Figure 2b. For instance, if the
 345 control policies only ensure environmental protection by negatively affecting living
 346 standards and livelihood of people by severely restricting consumption of natural
 347 resources, such policies will fail and lead to the need of re-formulating governance
 348 policies. Therefore, policies cannot be developed in isolation and a holistic approach to
 349 policy development that takes into account the interdependence of governance, livelihood
 350 and control is necessary.

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Figure 2 Interlinkages between Three Key Categories



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Policy formulation can be an iterative process where each policy option has to be evaluated multiple times to understand its collective effect on overall sustainability and individual effect on each SDG. For example, if a new policy on poverty eradication

359 (Livelihood policy category) is formulated, its effects on environmental conservation and
360 pollution control (control policy category) need to be analysed and vice versa. In order to
361 illustrate the importance of analysing SDGs for holistic and effective policy formulation,
362 analysis of interlinkages among Goals 1, 7 and 9 is done below as an example. Planning
363 for poverty eradication (Goal 1) should not be done in isolation but by ensuring that the
364 planning is in harmony with other SDGs. If poverty reduction is accomplished by
365 degrading the environment in such a way that the land eventually becomes infertile and
366 uninhabitable, then poverty alleviation will only be temporary. Therefore, Goal 1 should
367 focus on long term poverty alleviation, achieved by ensuring that natural capital is
368 sustained during poverty alleviation. Long term success of Goal 1 can be greatly
369 enhanced by access to sustainable energy (Goal 7) and development of sustainable
370 infrastructure and industries (Goal 9) as Goals 7 and 9 ensure that environmental
371 sustainability is taken into account while achieving Goal 1.

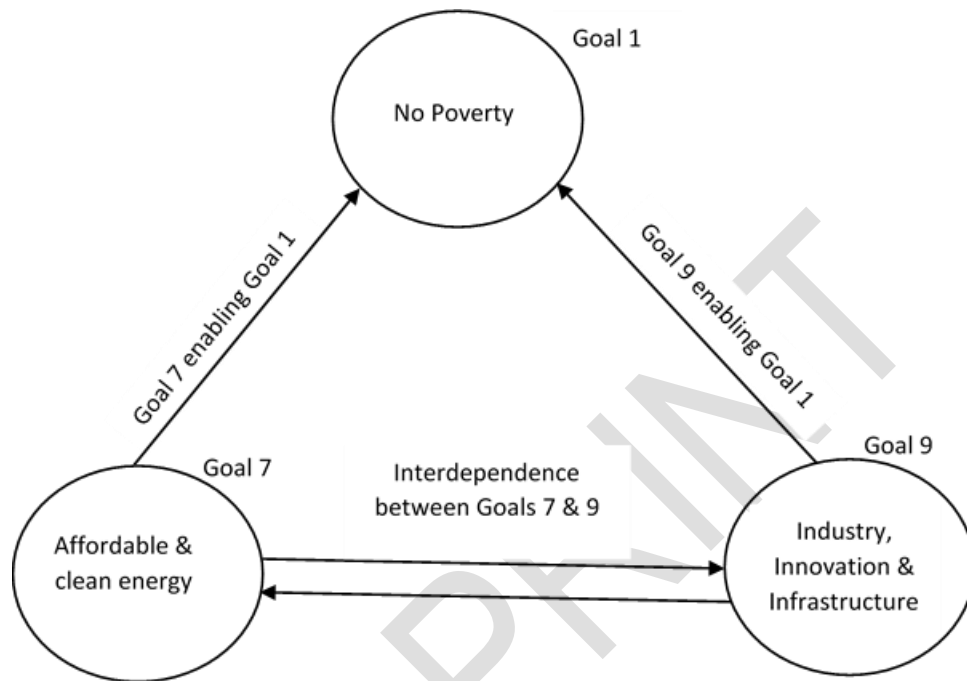
372 The experiences of China and India illustrate the roles of Goals 7 and 9 in achieving
373 Goal 1. China drastically reduced its poverty over the past few decades (Yao, 2000) in
374 which massive infrastructure development and industrialization played a major role
375 (Huang et al., 2017; Athukorala, 2015; Lavopa and Adam, 2012). Likewise,
376 infrastructure development has been found to be positively correlated with economic
377 development in India (Kumari and Sharma, 2017). Both infrastructure development and
378 industrialization require consumption of huge amounts of natural resources and energy.
379 For instance, China surpassed the US as the world's largest energy consumer in 2009 (US
380 EIA, 2011), and studies (Gozgor et al., 2018; Ozturk et al., 2010) have shown a direct
381 relationship between economic growth and energy consumptions for middle and high-
382 income nations. Overall, poverty eradication (Goal 1), energy access (Goal 7), and
383 infrastructure development and industrialization (Goal 9) are strongly interlinked and are
384 likely to be high priority goals for low-income nations.

385 The interrelationships among Goals 1, 7 and 9 are analysed by creating a conceptual
386 representation shown in Figure 3. This figure shows that the realisation of Goal 9 can be
387 greatly enhanced by meeting Goal 7. However, achieving Goal 9 can also enable meeting
388 Goal 7, and thus there exists a co-dependence and synergy between these two Goals.
389 Likewise, realisation of Goal 1 can be greatly enhanced by meeting Goals 7 and 9.

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Figure 3 Interrelationships among Goals 1, 7 and 9 of SDGs



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As Goals 7 and 9 co-depend on each other and both these Goals support achieving Goal 1, policy planning that leverages interlinkages among Goals 1, 7 and 9 can be very effective for achieving the SDGs. Planning based on interlinkages among these Goals is discussed below.

406 5.1 Planning for Goal 1

407 In order to plan for achieving Goal 1, two key factors, i.e. agricultural sustainability
408 and rural non-farm sectors, are discussed here.

409 5.1.1 Agricultural sustainability 410

411 Agriculture plays a vital role in poverty alleviation, and agricultural sustainability is
412 found to reduce the food-energy-water poverty nexus in Sub-Saharan Africa (Ozturk,
413 2017). It could be for this reason that one major objective for the Least Developed
414 Nations has been to make agriculture significantly more productive in order to achieve
415 greater food security (UNTCAD, 2018). Some policies for higher agricultural output and
416 income that have been stated are: increasing yields and labour productivity,
417 diversification, crop upgrading and international certification, strengthening cross-

418 sectoral linkages, and commercialization (UNTCAD, 2018). However, achieving all
419 these can be greatly facilitated by agricultural mechanization, which in turn requires
420 energy access. If agricultural mechanization is accomplished utilizing conventional
421 agricultural machinery, the needed energy is likely to come from fossil fuels such as
422 diesel and other petroleum products.

423 Since massive consumption of fossil fuels is not sustainable environmentally or, in
424 low-income nations, feasible economically, sustainable agricultural mechanization should
425 be supported by deployment and implementation of renewable energy based electric
426 agricultural machinery. Although mechanization is not mandatory for achieving Goal 1, it
427 can greatly enhance the prospects of poverty eradication as mechanization increases
428 agricultural yields and allows farmers to uplift their living standards. Electric drives for
429 agricultural machinery have been explored (Buning, 2010), and the use of electric tractors
430 is anticipated soon (NFU, 2017) in high-income nations. However, agricultural
431 mechanization in low-income nations should also be based on renewable energy in order
432 to minimize greenhouse gas emissions and ensure energy security. Since renewable
433 energy generally utilises resources available within a given country instead of importing
434 from other nations, it increases energy security. Additionally, use of renewable energy
435 also reduces depletion rate of natural resources. Overall, sustainable energy access (Goal
436 7) that does not rely heavily on fossil fuels should be considered as the means to realize
437 poverty eradication in order to achieve long term success of Goal 1.

438 5.1.2 Rural non-farm sector development

439 Rural non-farm activities consist of all non-agricultural activities which generate
440 income to rural households, either through waged work or through self-employment
441 (Davis, 2003). These activities are shown to reduce poverty (Davis, 2003; Hoang et al.,
442 2014; Imai, et al., 2015) and are important to achieve Goal 1. Since all these activities
443 require energy and infrastructure, sustainable energy (Goal 7) and infrastructure (Goal 9)
444 should be utilized for the development of the non-farm sector because poverty alleviation
445 that utilizes non-renewable energy resources, unsustainable infrastructure, or other
446 limited natural resources will only be short term. For example, if a small agro-processing
447 enterprise is planned as a non-farm activity, the electricity used by the agro-processing
448 machineries should be renewable energy based. Likewise, if a construction of a house to
449 be utilised as a hotel/tourist home-stay is planned as a non-farm income generating
450 activity, the construction of house could be done by utilising sustainable building
451 materials.

452 5.2 *Planning for Goals 7 and 9*

453 The planning for achieving Goals 7 and 9 should take into account the co-dependence
454 of these Goals and the roles of these Goals to achieve Goal 1. Improvement in living
455 conditions of the low-income people of Rwanda after access to electricity has been
456 documented (Lenz et al., 2018). However, there is a need to couple energy access with
457 income generating productive activities by developing the non-farm sector. Furthermore,
458 energy access should support infrastructure development that aids in poverty reduction.
459 For instance, communication and information have been identified as catalysts for
460 poverty reduction and sustainable development (UNESCO, 2016), and energy is required
461 to build communication and information infrastructure. On the other hand, infrastructure
462 development is also required to enable energy access, e.g. power plants construction and
463 distribution infrastructure. Additionally, factories and other industrial infrastructure that
464 manufacture renewable energy components such as wind turbines, water turbines, and
465 electric generators secure energy access. Thus, Goals 7 and 9 enable one another and
466 these two goals have to be met by understanding their co-dependence and synergistic
467 relationship.

468 **6 Research gaps**

469 This section points out research gaps in sustainable development studies of low-
470 income nations in order to set out an agenda for future research. While some of the
471 research gaps discussed below are derived from previous sections, it may be noted that
472 this section also encompasses other broad sustainability issues pertaining to low-income
473 nations that were identified from focused group discussions and consultations with
474 development practitioners during the research period. Therefore, addressing these
475 research gaps can facilitate in bridging the gaps between academic research and practical
476 implementations in low-income nations. An important research gap for ensuring
477 sustainability is the lack of qualitative and quantitative indicators that prioritize SDGs for
478 low-income nations. This may have to be performed on a case by case basis for every
479 low-income country because priorities can be country specific. Systematic approaches to
480 prioritize SDGs also need to be explored for different geographical, political and cultural
481 contexts.

482 Low-income nations lack sufficient data on the natural resources required to build
483 large scale renewable energy systems and other infrastructure, which has been identified
484 as one major challenge to achieving Sustainable Development Goals (Ndzabandzaba,
485 2015). Research is required to develop robust data acquisition and management systems
486 for low-income nations because these nations lack the sufficiently detailed data needed
487 for almost every aspect of development. Furthermore, analysis based on ecological

488 footprint and biocapacity accounting has found that there is no strong correlation between
489 per capita biocapacity and economic growth in low-income nations (Wackernagel et al.,
490 2019). Biocapacity here refers to the capacity of a geographical area to supply renewable
491 resources on a continual basis and to absorb its spillover wastes. This means that only
492 very small portions of economic value chains are flowing back to the low-income people
493 who own and manage their bioresources. Therefore, research is needed to better
494 understand the interactions between biocapacities and poverty reduction in rural
495 communities. Also, given the importance of a country's resource security, investigating
496 the economic implications of resource dynamics is crucial (Wackernagel et al., 2019).

497 Another major gap is the lack of research on methodologies for the robust evaluation
498 of international aid effectiveness. International development and donor agencies provide
499 financial and other support for low-income nations, but how much of the provided
500 support really reaches low-income people? Objectively verifiable indicators to evaluate
501 the effectiveness of international aid need to be developed. Likewise, proper mechanisms
502 to monitor public trust in governments need to be developed. Although the importance of
503 governance structures based on welfare regimes that guarantee basic human rights and
504 social security have been highlighted (Wood and Gough, 2006), such welfare regimes
505 cannot function efficiently unless the public trust in government is high. The public trust
506 in government and the public perception of the legitimacy of the government needs to be
507 thoroughly examined for international financial and other supports to effectively function
508 in low-income nations.

509 Analysis of the consistency of SDGs based on the DPSIR (Drivers, Pressures, States,
510 Impacts and Responses) framework by Spangenberg (2016) has pointed out that
511 pressures and drivers causing unsustainability are not sufficiently analysed and this is a
512 major challenge in achieving the SDGs. In this context, it is necessary to identify
513 pressures and drivers of unsustainability in low-income nations.

514 From a global sustainability point of view, an important research gap is the lack of
515 analysis on the share of responsibility of low-income nations in causing impacts that
516 threaten global sustainability such as anthropogenic climate change and environmental
517 degradation compared to middle and high-income nations. If the share of low-income
518 nations is insignificant compared to that of middle and high-income nations in
519 threatening global sustainability, the United Nations should consider developing new
520 sustainability agenda exclusively targeting middle and high-income nations. The
521 discourse on sustainable development is considered to be of great significance because it
522 is viewed as a crucial tool to achieve global sustainability but is the notion of 'sustainable
523 development' still suitable for high-income nations or is this notion only suitable for
524 middle and low-income nations? This question needs to be explored, specifically since
525 the idea that perpetual growth and development can be indefinitely sustained is debatable.

526 Exploring this question will allow us to rigorously define the term ‘development’ and
527 provide us valuable insights on how the definition of ‘development’ could be different for
528 high, middle and low-income nations. It is noteworthy that the high relevance of
529 ‘sustainable development’ is only due to the fact that it is considered to be a pathway and
530 process to achieve sustainability at a planetary scale. Therefore, it is necessary to explore
531 the types of ‘development’ that can be sustained indefinitely.

532 **7 Conclusions**

533 This paper provides a systematic approach to conduct sustainability policy planning
534 for low-income nations by creating three categories of policies, i.e. Governance,
535 Livelihood and Control. The Livelihood category is further divided into poverty
536 eradication, and infrastructure & urbanisation. Similarly, the Control category is further
537 divided into two sub-categories, namely, ‘environmental conservation & pollution
538 control’ and ‘accounting for local culture’. Relevant United Nations Sustainable
539 Development Goals (SDGs) are assigned to each category/sub-category. We then
540 highlight key actions needed in each policy category to achieve SDGs. By creating a
541 sustainability policy structure (Figure 1), we facilitate much needed analysis on
542 sustainability policy planning exclusively focused on low-income nations.

543 We underscore the importance of prioritising SDGs based on their relative importance
544 in a case by case basis for different countries as every low-income nation can have
545 different priorities and therefore generalisation may not be feasible. We then provide an
546 approach to further support the policy planning for the fulfilment of the SDGs based on
547 analysing interlinkages of high priority SDGs. The importance of studying the
548 interactions amongst categories, themes and SDGs goals has been discussed. This
549 approach is illustrated by conducting interlinkage analysis of Goals 1, 7 and 9 (Figure 3)
550 as an example since these Goals are of high priority to many, if not all, low-income
551 nations. Moreover, research gaps that need to be filled are identified and discussed in
552 order to set out research agenda for future research. We call for extensive collaborations
553 among research institutions, universities, government bodies, international development
554 and donor agencies and other stakeholders to work towards filling the research gaps
555 highlighted in this paper.

556

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561

References

- 562 Athukorala, P.C., Kunal, S. (2015) 'Industrialisation, Employment and Poverty',
563 Forthcoming in Michael Tribe and John Weiss (eds.), *Routledge Handbook of*
564 *Industrial Development*, London: Routledge, pp. 84- 95 [Online]
565 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2630400 (Accessed 28 July
566 2019).
- 567 Beltekian, D., Ortiz-Ospina, E. (2019) *Extreme poverty is falling: How is poverty*
568 *changing for higher poverty lines?*, Our World in Data 2018 [Online]
569 <https://ourworldindata.org/poverty-at-higher-poverty-lines> (Accessed 28 July 2019).
- 570 Böcher M., Krott, M. (2016) 'The RIU Model as an Analytical Framework for Scientific
571 Knowledge Transfer', In: *Science Makes the World Go Round*, Springer, Cham,
572 https://doi.org/10.1007/978-3-319-34079-1_2.
- 573 Brakman, S., Garretsen, H., van Marrewijk, C. (2015) 'Regional resilience across
574 Europe: on urbanisation and the initial impact of the Great Recession', *Cambridge*
575 *Journal of Regions, Economy and Society*, Vol. 8, Issue 2, pp. 225–240.
- 576 Broman, G.I., Robert, K.H. (2017) 'A framework for strategic sustainable development',
577 *Journal of Cleaner Production*, Vol. 140 No. 1, pp. 17-31.
578 <https://doi.org/10.1016/j.jclepro.2015.10.121>.
- 579 Buning, E. A. (2010) *Electric drives in agricultural machinery - approach from the*
580 *tractor side*, 21st Annual Meeting Bologna; Club of Bologna [Online]
581 http://www.clubofbologna.org/ew/documents/KNR_Buning.pdf (Accessed 28 July
582 2019).
- 583 Coaffee et al. (2018). 'Urban resilience implementation: A policy challenge and research
584 agenda for the 21st century', *Journal of Contingencies and Crisis Management*,
585 <https://doi.org/10.1111/1468-5973.12233>.
- 586 Cobbinah, P.B., Erdiaw-Kwasie, M.O., Amoateng, P. (2015) 'Rethinking sustainable
587 development within the framework of poverty and urbanisation in developing
588 nations', *Environmental Development*, Vol. 13, pp. 18-32.
- 589 Davis, J.R. (2003) *The rural non-farm economy, livelihoods and their diversification:*
590 *Issues and options*, Natural Resources Institute, NRI Report No: 2753 [Online]
591 <https://econwpa.ub.uni-muenchen.de/econ-wp/dev/papers/0510/0510016.pdf>.
592 (Accessed 28 July 2019).
- 593 DESA (2020) *Progress of goal 1 in 2019*, Division of Sustainable Development Goals,
594 United Nations [Online] <https://sustainabledevelopment.un.org/sdg1> (Accessed 1
595 June 2020).
- 596 Game, E.T., et al. (2018) 'Cross-discipline evidence principles for sustainability policy',
597 *Nature Sustainability*, Vol. 1, pp. 452-454.
- 598 Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C.,
599 Shyamsundar, P., Steffen, W., Glaser, G., Kanie, N., Noble, I. (2013). 'Sustainable
600 development goals for people and planet', *Nature Comments*, Vol. 495, pp. 305-
601 307.
- 602 Gozgor, G., Lau, C.K.M., Lu Z. (2018) 'Energy consumption and economic growth: New
603 evidence from the OECD nations', *Energy*, Vol. 153, pp. 27-34.

- 604 Hoang, T.X., Pham, C.S, Ulubaşođlu, M.A. (2014) ‘Non-Farm Activity, Household
605 Expenditure, and Poverty Reduction in Rural Vietnam: 2002–2008’, *World*
606 *Development*, Vol. 64, pp. 554-568.
- 607 Huang, Z., Lahiri, T. (2017) ‘China’s path out of poverty can never be repeated at scale
608 by a country again’, *Quartz* [Online] [https://qz.com/1082231/chinas-path-out-of-](https://qz.com/1082231/chinas-path-out-of-poverty-can-never-be-repeated-at-scale-by-any-other-country/)
609 [poverty-can-never-be-repeated-at-scale-by-any-other-country/](https://qz.com/1082231/chinas-path-out-of-poverty-can-never-be-repeated-at-scale-by-any-other-country/) (Accessed 28 July
610 2019).
- 611 Imai, K.S., Gaiha, R., Thapa, G. (2015) ‘Does non-farm sector employment reduce rural
612 poverty and vulnerability? Evidence from Vietnam and India’, *Journal of Asian*
613 *Economics*, Vol. 36, pp. 47-61.
- 614 Jabareen, Y. (2008) ‘A New Conceptual Framework for Sustainable Development’,
615 *Environment, Development and Sustainability*, Vol. 10, No. 2, pp. 179-192.
- 616 Keen, M., Connell, J. (2019) ‘Regionalism and Resilience? Meeting Urban Challenges in
617 Pacific Island States’, *Urban Policy and Research*, Vol. 37, Iss. 3, pp. 324-337.
- 618 Kenny, C. (2017) ‘How Much Aid is Really Lost to Corruption?’, *Center for Global*
619 *Development* [Online], [https://www.cgdev.org/blog/how-much-aid-really-lost-](https://www.cgdev.org/blog/how-much-aid-really-lost-corruption)
620 [corruption](https://www.cgdev.org/blog/how-much-aid-really-lost-corruption).
- 621 Kimengsi, J.N., Gwan, S.A. (2017) ‘Reflections on Decentralization, Community
622 Empowerment and Sustainable Development in Cameroon’, *International Journal*
623 *of Emerging Trends in Social Sciences*, Vol. 1, No. 2, pp. 53- 60, DOI:
624 10.20448/2001.12.53.60.
- 625 Korhonen, J., Honkasalo, A., Seppälä, J. (2018) ‘Circular Economy: The Concept and its
626 Limitations’, *Ecological Economics*, Vol. 143, pp. 37-46.
- 627 Kumari, A., Sharma A.K. (2017) ‘Physical & social infrastructure in India & its
628 relationship with economic development’, *World Development Perspectives*, Vol. 5,
629 pp. 30-33.
- 630 Lavopa, A., Adam, S. (2012) Industrialization, employment and poverty. MERIT
631 Working Papers 081, *United Nations University - Maastricht Economic and Social*
632 *Research Institute on Innovation and Technology (MERIT)* [Online]
633 <https://ideas.repec.org/p/unm/unumer/2012081.html> (Accessed 28 July 2019).
- 634 Lenz, L., Munyehirwe, A., Peters, J., Sievert, M. (2015) ‘Does Large-Scale Infrastructure
635 Investment Alleviate Poverty? Impacts of Rwanda’s Electricity Access Roll-Out
636 Program’, *World Development*, Vol. 89, pp. 88-110.
- 637 Loorbach, D. (2010) ‘Transition Management for Sustainable Development: A
638 Prescriptive, Complexity-Based Governance Framework’, *Governance*, Vol. 23,
639 No. 1, pp. 161-183.
- 640 Lusseau, D., Mancini, F. (2019) ‘Income-based variation in Sustainable Development
641 Goal interaction networks’, *Nature Sustainability*, Vol. 2, 242–247.
- 642 Mackey, T. K., Vian, T., Kohler, J. (2018) ‘The sustainable development goals as a
643 framework to combat health-sector corruption’, *Bulletin of the World Health*
644 *Organization*, Vol. 96, No. 9, pp. 634- 643.
- 645 Meadowcroft, J., Farrell, K.N. and Spangenberg, J. (2005) ‘Developing a framework for
646 sustainability governance in the European Union’, *International Journal of*
647 *Sustainable Development*, Vol. 8, Nos. 1/2, pp. 3–11.

- 648 Mustunsir, M. (2015) 'Sustainability vs economic growth: a third world perspective',
 649 *World Journal of Entrepreneurship, Management and Sustainable Development*,
 650 Vol. 11, No. 4, pp. 312-324, <https://doi.org/10.1108/WJEMSD-04-2015-0018>.
- 651 Ndzabandzaba, C. (2015) *Data sharing for sustainable development in less developed*
 652 *and developing nations*, Brief of GSDR 2015, United Nations, [Online]
 653 [https://sustainabledevelopment.un.org/content/documents/615860-Ndzabandzaba-](https://sustainabledevelopment.un.org/content/documents/615860-Ndzabandzaba-Data%20sharing%20for%20sd%20in%20less%20developed%20and%20developing%20nations.pdf)
 654 [Data%20sharing%20for%20sd%20in%20less%20developed%20and%20developing](https://sustainabledevelopment.un.org/content/documents/615860-Ndzabandzaba-Data%20sharing%20for%20sd%20in%20less%20developed%20and%20developing%20nations.pdf)
 655 [%20nations.pdf](https://sustainabledevelopment.un.org/content/documents/615860-Ndzabandzaba-Data%20sharing%20for%20sd%20in%20less%20developed%20and%20developing%20nations.pdf) (Accessed 28 July 2019).
- 656 Nieuwenhuijsen, M.J., Khreis, H. (2016) 'Car free cities: Pathway to healthy urban
 657 living', *Environmental International*, Vol. 94, 251-262.
- 658 NFU (2017) *Electric tractors by 2020? – a review of advanced vehicle technology in the*
 659 *agricultural sector*, National Farmers Union, UK [Online]
 660 <https://www.nfuonline.com/assets/93644> (Accessed 28 July 2019).
- 661 OECD, UNEP (2019) *G20 contribution to the 2030 Agenda - Progress and Way*
 662 *Forward*, Organisation for Economic Co-operation and Development and the
 663 United Nations Development Programme [Online]
 664 <https://www.oecd.org/g20/topics/agenda-2030-development/G20-SDG-Report.pdf>
 665 (Accessed 15 April 2021).
- 666 Olowu, D. (2003) 'Challenge of multi-level governance in developing countries and
 667 possible GIS applications', *Habitat International*, Vol. 24, No. 4, pp. 501- 522.
- 668 Ozturk, I., Aslan A., Kalyoncu H. (2010) 'Energy consumption and economic growth
 669 relationship: Evidence from panel data for low and middle income nations', *Energy*
 670 *Policy*, Vol. 38, No. 8, pp. 4422-4428.
- 671 Ozturk I. (2017) 'The dynamic relationship between agricultural sustainability and food-
 672 energy-water poverty in a panel of selected Sub-Saharan African Nations', *Energy*
 673 *Policy*, Vol. 107, pp. 289- 299.
- 674 Robert, K.H. (2000) 'Tools and concepts for sustainable development, how do they relate
 675 to a general framework for sustainable development, and to each other?', *Journal of*
 676 *Cleaner Production*, Vol. 8, No. 3, pp. 243-254.
- 677 Spangenberg, J.H. (2016) 'Hot Air or Comprehensive Progress? A Critical Assessment of
 678 the SDG', *Sustainable Development*, DOI: 10.1002/sd.1657.
- 679 Tosun, J., Leininger, J. (2017) 'Governing the Interlinkages between the Sustainable
 680 Development Goals: Approaches to Attain Policy Integration', *Global Challenges*,
 681 <https://doi.org/10.1002/gch2.201700036>.
- 682 TI (2017) 'No sustainable development without tackling corruption: the importance of
 683 tracking SDG 16', *Transparency International* [Online],
 684 [https://www.transparency.org/en/news/no-sustainable-development-without-](https://www.transparency.org/en/news/no-sustainable-development-without-tackling-corruption-SDG-16#)
 685 [tackling-corruption-SDG-16#](https://www.transparency.org/en/news/no-sustainable-development-without-tackling-corruption-SDG-16#).
- 686 UCLG (2018) *Culture in the sustainable development goals: A guide for local action*,
 687 *United Cities and Local Governments*. [Online],
 688 https://www.uclg.org/sites/default/files/culture_in_the_SDG.pdf.
- 689 UNCTAD (2018) *Achieving the sustainable development goals in the least developed*
 690 *nations: A compendium for policy options*, United Nations, [Online]
 691 https://unctad.org/en/PublicationsLibrary/aldc2018d4_en.pdf (Accessed 28 July
 692 2019).

- 693 UNDP (2016) *Sustainable urbanization strategy*, United Nations Development
694 Programme [Online],
695 [http://www.undp.org/content/dam/undp/library/Sustainable%20Development/Urban](http://www.undp.org/content/dam/undp/library/Sustainable%20Development/Urbanization/UNDP_Urban-Strategy.pdf)
696 [ization/UNDP_Urban-Strategy.pdf](http://www.undp.org/content/dam/undp/library/Sustainable%20Development/Urbanization/UNDP_Urban-Strategy.pdf).
- 697 UNESCO (2012) *Culture: a driver and an enabler of sustainable development*, United
698 Nations Educational, Scientific and Cultural Organization [Online],
699 <https://en.unesco.org/about-us/introducing-unesco>.
- 700 UNESCO (2016) *Sustainable Development in the Least Developed Nations - Towards*
701 *2030*, United Nations [Online]
702 <http://unesdoc.unesco.org/images/0024/002448/244835E.pdf> (Accessed 28 July
703 2019).
- 704 United Nations. (2015) *Transforming our world: the 2030 Agenda for Sustainable*
705 *Development* [Online]
706 http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E
707 (Accessed 28 July 2019).
- 708 United Nations. (2018) *World Economic Situation and Prospects. Statistical Annex-*
709 *Country Classifications* [Online] [https://www.un.org/development/desa/dpad/wp-](https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2018_Annex.pdf)
710 [content/uploads/sites/45/WESP2018_Annex.pdf](https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2018_Annex.pdf) (Accessed 28 August 2019).
- 711 UNSTATS (2017) *Work of the Statistical Commission pertaining to the 2030 Agenda for*
712 *Sustainable Development* [Online] <https://undocs.org/A/RES/71/313> (Accessed 20
713 April 2021).
- 714 US EIA. (2011) *China and India account for half of global energy growth through 2035*,
715 US Energy Information Administration 2011 [Online]
716 <https://www.eia.gov/todayinenergy/detail.php?id=3130> (Accessed 29 July 2019).
- 717 Wackernagel, M., Lin, D., Evans, M., Hanscom, L., Raven, P. (2019) ‘Defying the
718 Footprint Oracle: Implications of Country Resource Trends’, *Sustainability*, Vol. 11
719 No. 7, <https://doi.org/10.3390/su11072164>.
- 720 Weiping, T. (2018) *China's Approach to Reduce Poverty: Taking Targeted Measures to*
721 *Lift People out of Poverty*, International Poverty Reduction Center in China
722 [Online] [https://www.un.org/development/desa/dspd/wp-](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/05/31.pdf)
723 [content/uploads/sites/22/2018/05/31.pdf](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2018/05/31.pdf) (Accessed 28 July 2019).
- 724 Wood, G and Gough I. (2006). ‘A comparative welfare regime approach to global social
725 policy’, *World Development*, Vol. 34, No. 10, pp. 1696-1712, ISSN 0305-750X.
- 726 Yao, S. (2000) ‘Economic Development and Poverty Reduction in China over 20 Years
727 of Reforms’, *Economic Development and Cultural Change*, Vol. 48, No. 3, pp. 447-
728 474. <https://doi.org/10.1086/452606>.
- 729 Zeigermann, U, Böche, M. (2020) ‘Challenges for bridging the gap between knowledge
730 and governance in sustainability policy – The case of OECD ‘Focal Points’ for
731 Policy Coherence for Development’, *Forest Policy and Economics*, Vol. 114.