

**Local Content Implementation Enhancement through
Infrastructure Development in Ghana's Oil Industry**

Highlights of the Paper

- It discusses local content implementation policy in the oil industry using Ghana as case country.
- The central theme of the paper is focus on how infrastructure development could enhance local implementation in Ghana.
- To that end, three cases are reviewed from three countries in three continents; Angola, Brazil and Norway.
- In addition, research participants are purposively sampled and interviewed.
- Policy options are recommended for bridging infrastructure deficit in Ghana to enhance LC implementation.

Abstract

Since the discovery of oil and gas (O&G) in commercial quantities in 2007, Ghana has made some progress in passing several policies such as Local Content and Participation Framework, ostensibly to stem the effects of resource curse – a paradox which connotes that countries with more natural resources turned to be undeveloped than countries without natural resources. Put it differently, the country's local content is meant to stimulate industry development by indigenizing the needs of the petroleum industry. However, the above aim is constrained by the country's infrastructure deficit of about US\$ 2.5 billion annually needed to provide the enabling environment for the growth of indigenous companies. The study, therefore, is to propose policy options for enhancing local content implementation through infrastructure development. To that end, the policy implementation in Angola, Brazil and Norway is reviewed, and the research participants are purposively sampled and interviewed. The

40 study found that the country could only diversify the economy by
41 investing a chunk of the resource rent in infrastructure than recurrent
42 expenditure either wholly or public-private partnership. Consequently,
43 regulatory institutions and legal framework should be strengthened to
44 attract private investment in infrastructure development. In addition, a
45 special provision should be inserted in future petroleum contracts to
46 support the Infrastructure Fund; through infrastructure-for-oil trade; and
47 encouraging voluntary contribution from oil companies in exchange for
48 reduced taxes into the Infrastructure Fund. The findings contribute to the
49 existing literature in local content development by moving the discussion
50 from training, local employment and goods and services targets to
51 developing host country's local infrastructure for sustainable development
52 of indigenous and foreign businesses.

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56 **Keywords** Local content, Ghana, Infrastructure, Oil and Gas

57

58 **1. Introduction**

59 Resource-rich developing countries can increase the value contribution
60 from their resources (minerals, oil and gas etc.) to stimulate socio-
61 economic growth and development through two main routes - fiscal policy
62 and non-fiscal policy measures [1,2]. The former has been the usual
63 means of generating revenue to a host country's coffers through royalties
64 and tax instruments. On the other hand, non-fiscal policy measures come
65 in the form of what is called Local Content Policy (LCPs) [1]. The policy
66 aims to leverage the petroleum value chain to generate sustained and
67 inclusive economic growth through economic diversification and
68 employment opportunities [3]. Indeed, the LCPs are used to support
69 broad-based economic growth was first introduced in the North Sea in the
70 1970s which ranged from direct restrictions on imports to direct state
71 interventions [4].

72

73 Similarly, the LC policy introduction in Ghana, inter alia, seeks to promote
74 value-addition and job creation via the use of domestic goods and services

75 and develop local capacities in the industry's value chain through
76 education, skills transfer and technology transfer [5]. The significant
77 discovery of petroleum at Ghana's Jubilee field in 2007 promoted several
78 studies on how best to maximize benefits from its resources. These
79 studies were initiated to avert Ghana from joining the bandwagon of
80 resource-cursed countries in Africa and mostly centred on LCPs and its
81 derivatives: Governance; sectorial linkages; LCP enhancement; and
82 Country's Vulnerability. For instance, Ablo [6] examined the forms of
83 linkages the Enterprise Development Centre (EDC) promotes under LCPs
84 and argued that the centre facilitates interaction between local players
85 and international oil companies (IOCs) which enhances local
86 entrepreneurs' knowledge in the sector [6]. Also, Senoo and Armah [7]
87 studied the effectiveness of Ghana's LCP and concluded that the LC
88 legislation aligned within the political, social, and economic context and
89 stakeholder participation do not support effective implementation.
90 Similarly, ACEP [8] studied the achievements, challenges and the way
91 forward of the LC policy. It argued that the policy has created
92 employment, increase usage of local goods and services but challenges
93 remain in the area of financial support to local firms, enforcement system,
94 and a disparity between local and expatriates' salaries. However, one
95 critical area which has not been studied is the issue of local infrastructure
96 for propelling LCPs which is argued to be one of the factors impeding the
97 policy implementation in Africa [9,10,11]. The presence of local
98 infrastructure is argued by Heum et al. [11,12,13] to be one of the critical
99 variables needed in local content development in a host country's
100 petroleum sector. The variable of local infrastructure consists of social
101 infrastructure, educational infrastructure, institutional infrastructure,
102 business development infrastructure, and information technology. Public
103 utilities such as electricity, roads, telecommunications, water supply,
104 railways and air transport which are critical business development
105 infrastructures help create a conducive environment for business
106 development and productivity [13]. The quality of the above areas will
107 among others influence profitability considerations for investments
108 decisions [14]. In other words, a stable environment attracts foreign
109 direct investments (FDI) and makes technology transfer possible [12].

110 They further argued that social infrastructure reduces the chances of
111 social disorder thereby promoting social cohesion between different social
112 groups. Likewise, IT infrastructure has a substantial impact on local
113 content development through information dissemination which helps to
114 foster local content in the O&G industry [14]. Apart from the above, they
115 further argued that to improve local skills and capabilities and bridge the
116 gap between local and international companies in terms of technology it
117 starts from building industrial infrastructure [14]. In view of the above,
118 the paper will answer the following questions:

- 119 • Is there a relationship between infrastructure and local content
120 development in the oil industry?
- 121 • What are the policy options for bridging the infrastructure deficit in
122 Ghana?
- 123 • What are the generic policy lessons from the case countries?

124 Accordingly, cases from Angola, Brazil and Norway will be reviewed and
125 interviews are conducted to answer the above questions. This, therefore,
126 provides a basis for recommending policy options for enhancing local
127 content implementation through infrastructure development. The paper
128 introduces a new angle to the debates on local content development by
129 focusing on local infrastructure development to enhance local content
130 policy implementation.

131

132 **2. Local Content Implementation in Ghana**

133 Ghana local content (LC) is defined as “the quantum or percentage of
134 locally produced materials, personnel, finance, goods and services
135 rendered in the petroleum industry value chain and which can be
136 measured in monetary terms” [15]. The driving force behind the policy is
137 to create inter-sectorial linkages in the wider economy and facilitate the
138 utilisation of indigenous human and material resource in the petroleum
139 industry [16]. The LC law established a Local Content Committee to
140 oversee, coordinate, and manage the development of LC, preparing
141 guidelines, to include targets for LC reporting, and undertaking LC
142 monitoring and audits. The act also proposes the establishment of Oil and
143 Gas Business Development and Local Content Fund to support local
144 capability development through education, training, research and

145 development in the industry [5]. Subsequently, an Enterprise
 146 Development Centre (EDC) has been established to enhance the capacity
 147 of local businesses to meet the standards of the petroleum industry, which
 148 is currently limited in its impact on Ghanaian SMEs [6]. Despite this, EDC
 149 has made tremendous progress in building the capacity of local businesses
 150 through targeted training.

151

152 The LC law is believed to have been successful in terms of people
 153 employed in the industry. For example, out of 6,900 employed in the
 154 industry, over 90 per cent are Ghanaians, out of which 40 per cent is in
 155 managerial position (lower and mid-level) [17]. In supporting the positive
 156 impact of the policy, ACEP [8] argued that it has created jobs for about
 157 5,590 locals as of 2015 out of which 6,940 were employed in the
 158 upstream sector. However, it is believed that the targets set by the
 159 government within the LC policy framework is over-ambitious,
 160 prescriptive, and overemphasises domestic ownership, and making the
 161 schedule difficult to implement given the limited timeframe of 10 years to
 162 achieve the said target [11]. Table 1 shows the government target of at
 163 least 90 per cent full local participation in all aspects of the O&G value
 164 chain by 2020. Additionally, they argued that the regulations ignored the
 165 country's developmental state making it difficult to achieve such a target.

166

167 Table 1. Policy measurement for the next 10 years

Item	Policy implementation period		
	Initial year	5years	10years
1. Goods and services	10%	50%	60-90%
2. Recruitment and training			
(a) Management staff	30%	50-60%	70-80%
(b) Technical core staff	20%	50-60%	70-80%
(c) Other staff	80%	90%	100%

168 Source: Ghana Local Content Regulation 2013

169

170 For instance, the infrastructure deficit in Ghana is estimated in the range
171 of about \$90 billion [18]. Forster and Pushak [19] estimated that Ghana
172 has to raise its annual expenditure to US\$2.3 billion to address the
173 country's infrastructure challenges. Furthermore, they assert that
174 although the country spends \$1.2 billion per year on infrastructure
175 development, equivalent to 7.5 per cent of GDP [19] no significant impact
176 has been realised. Petroleum revenue management law in Ghana requires
177 a portion of the petroleum revenue to be used for infrastructure
178 development. Since 2011, it is estimated that the country has earned over
179 \$3.7 billion from the petroleum resources as of June 2017 [20]. Out of
180 this amount, over 50 per cent has gone into financing the annual budget,
181 and the rest to the state oil company, GNPC and Ghana Petroleum Funds.
182 To bridge the infrastructure deficit, the government decided to use a
183 portion of the resource rents in financing critical infrastructure as
184 stipulated in the Petroleum Revenue Management Act (PRMA) 815.
185 According to Section 21 (3) of PRMA 815, in the absence of a national
186 development plan, the Annual Budget Funding Amount (ABFA) shall focus
187 on key areas such as:

- 188 • Agriculture and industry,
- 189 • Physical infrastructure,
- 190 • Developing alternative sources of energy,
- 191 • Public safety and security, and
- 192 • Environmental protection, sustainable utilisation and the protection
193 of natural resources [21].

194 More importantly, the act requires the benchmark revenue allocated to
195 the budget to be in tandem with medium to a long-term development
196 plan, and to be reviewed every three years after the commencement of
197 the act. Additionally, the act created the Ghana Petroleum Fund. This fund
198 comprised of the Ghana Stabilisation Fund and Ghana Heritage Fund and
199 is to cushion the impact of oil prices fluctuations on the international
200 market as well as to save for future generations respectively.
201 Furthermore, section 23 (1) states "commencing in the year 2011 until
202 the year when petroleum production ceases, the following rules shall
203 apply: (b) a minimum of thirty per cent of the excess revenue determined
204 in subsection (1) (a) shall be transferred into the Ghana Heritage Fund

205 and the balance shall be transferred into the Ghanaian Stabilisation Fund
206 each quarter (PCG, 2015b). Despite the above regulations, Ofoosu-Peasah
207 [20] argued that the government was non-compliant with the above
208 provision of minimum of 30% between 2011 and 2016. ACEP [22]
209 critiquing the act argued that the areas listed under section 21(3) for oil
210 revenue usage is non-restrictive allowing the sector minister to use the
211 discretion granted him within section 21(3) and (5) of the act. For
212 instance, they posit that, between 2011 and 2016, the government
213 prioritised amortisation of loans for O&G infrastructure, roads and other
214 critical infrastructure, capacity building, and agriculture modernisation.
215 Furthermore, they moot that 'capacity building' allows the government to
216 invest in a wide range of areas thereby defeating the fundamental
217 purpose of prioritisation. Again, the Ministry of Finance has not been
218 unable to report completion status of oil revenue-financed projects
219 thereby flouting section 48 (2) b of the act [22]. The net effect of all this
220 is that the government of the day tend to use oil revenue as they see fit
221 without investing the oil money to lay a solid foundation for the growth of
222 domestic companies.

223

224 According to World Bank's Ghana's Infrastructure: A continental
225 Perspective report, improving the country's infrastructure level to that of
226 the region's middle-income countries could boost annual growth by more
227 than 2.7 percentage points [23]. To fix this infrastructure deficit, the
228 World Bank puts the figure around \$2.3 billion per year over the next ten
229 years, divided fairly between investments on one hand and maintenance
230 on the other [23]. Furthermore, the Bank estimates that during the
231 2000s, infrastructure contributed a little over one percentage point to
232 Ghana's improved per capita growth performance but unreliable power
233 supply held growth back by 0.5 percentage points. This intermittent power
234 supply creates an unfavourable environment for businesses to thrive, and
235 thereby reducing the capacity of local firms to supply manufactured goods
236 to the oil industry. Similarly, having an effective transport system, for
237 instance, will create a conducive environment for businesses to obtain raw
238 materials and provide goods and services. In a nutshell, developing
239 infrastructure for business development (transport infrastructure,

240 electricity, and water etc.) will constitute a conducive environment for the
241 development of domestic companies as intended by the LC policy and
242 ensures positive spill-over to the non-petroleum sector of the economy.
243 This ultimately helps in ensuring the diversification of the economy.

244

245

246 **3. Case Countries**

247 **3.1 Angola**

248 The objectives of Angola local content are to ensure the Angolanization of
249 the workforce and local sourcing of goods and services. This policy of
250 Angolanization of the country's workforce started in 1979, with law 10/79
251 giving Sonangol exclusive rights over the country resources. However,
252 due to inadequate technical capabilities, the state-owned company was
253 allowed to partner with international oil companies for knowledge transfer
254 [24]. In 1982, a decree was issued, 20/82 of 1982, to "endow the
255 People's Republic of Angola with national personnel able to assure the
256 functioning of the economic key sectors" [25]. The above decree laid the
257 foundation for LC in the country's O&G workforce which covers
258 recruitment, training and career progression. Apart from the above,
259 domestic sourcing of goods and services are enforced through Decree
260 13/03 of 2003 which is meant to achieve: (i) socio-economic
261 development; and (ii) fairness in the distribution of the country's wealth
262 (ibid). In terms of institutional responsibility of LC implementation and
263 monitoring, the Ministry of Petroleum is responsible for LCPs formulation
264 and regulation of Angolanization of the workforce. Recruitment and
265 training by companies have to be approved on yearly basis by the sector
266 ministry and is monitored through an annual implementation report
267 submitted to the ministry which reports progress against the plan, the
268 challenges encountered and proposed solutions. Tordo et al. [4] argued
269 that LC policies have helped Sonangol to develop over 20 joint ventures
270 with IOCs to supply core and noncore goods and services to the industry.
271 Furthermore, it is argued that LC policy has created new businesses which
272 supply goods and services previously supplied by international companies
273 [17]. However, there are challenges still confronting LCPs implementation
274 that hinders the policy of Angolanization and preferential treatment of

275 small and medium-sized enterprises (SMEs) growth, and even the
276 international oil companies and the service companies. One of the
277 challenges facing IOCs operating in Angola is the issue of infrastructure
278 despite favourable economic climate in Angola, the current transport and
279 logistics infrastructure remains a major problem in the country [25, 26].
280 This problem is partly due to the 27 years of civil war (plus years of
281 neglect and lack of maintenance) which left most of the country's physical
282 infrastructure in destruction, especially in rural areas [24,27,28].
283 However, the country spends almost \$4.3 billion per year on infrastructure
284 with most of the funds skewed toward transport [29] predominantly
285 funded by domestic fiscal resources, and China, a source of external
286 finance through "infrastructure-for-oil trade" agreement [26,30]. This
287 policy of "infrastructure-for-oil trade" has resulted in the expansion of rail
288 infrastructure and housing in Angola [30]. This policy is similar to
289 Nigeria's Content Development Fund for financing infrastructure
290 development.

291

292 **3.2 Brazil**

293 In 1864, oil was first discovered in Brazil but took over seven decades for
294 the commercial quantities of oil to be discovered in 1939. As of 2016, the
295 country produced 3.24 million b/d of petroleum making it the ninth-
296 largest producer in the world and the third-largest after the United States
297 and Canada in the Americas [31]. During the early phase of the oil
298 industry, full ownership of the oil and gas fields were vested in the state
299 thereby monopolizing the rights for exploration, transportation,
300 distribution and marketing [25]. For instance, the decrees 336 of 1937
301 and 395 of 1938 nationalised the O&G sector and its related products.
302 However, a new government in 1945 liberalised the industry paving way
303 for foreign companies to obtain licenses for concessions. In 1953, a new
304 government re-nationalised the industry through law number 2004
305 creating the state-owned company, Petrobras with monopoly rights over
306 all upstream operations and to help promote domestic sourcing of goods
307 and services (ibid). Brazil adopted import-substitution industrialization like
308 many governments in Latin America aimed at producing national
309 industries to reduce the dependency on imports [32]. The state took a

310 leading role in developing the oil and gas industry in Brazil. As of 2013, it
311 was estimated that Petrobras produced 1.9 million barrels per day (bpd)
312 out of the 2.7 million produced in the country [31]. In addition, Petrobras
313 controls over 90 per cent of the production of oil and gas in the upstream
314 and also has considerable control over transportation (pipelines) through
315 its subsidiary, Transpetro. By 1960, the number of domestic suppliers to
316 the oil industry had supplied more than 60 per cent of the material and
317 equipment sourced by the state-owned oil company [25]. In 1997, an Oil
318 Bill was passed which fully liberalised and created a new regulatory body
319 to supervise the petroleum activities in the upstream industry. The bill
320 created the National Agency of Petroleum, Natural Gas and Biofuels (ANP)
321 linked to the Ministry of Mines and Energy (MNE) [11]. Today, Petrobras
322 plays a leading role in deepening and implementing the country's local
323 content requirements. The LC policy is linked to the country's overall
324 industrial strategy aimed at protecting domestic industry and increasing
325 local firms' competitiveness [25]. Basically, local content policy in the
326 Brazilian oil industry is to create job opportunities for locals, improve
327 domestic capabilities, improve domestic technological development, and
328 develop national industry participation in the sector on a competitive basis
329 [33]. To that end, oil companies are required to submit LC plan
330 committing to the acquisition of domestic goods and services, and
331 decisions for licenses are mostly based on this [11]. In addition, bidders
332 are expected to outline the minimum exploratory programme and the
333 signing bonus and the percentage of local content they will commit to
334 which are used in calculating a points system to rank the bids (ibid). In
335 terms of credit support for local suppliers, the Brazilian National
336 Development Bank (BNDES) impose a minimum LC requirement to offer
337 financing facilities to local suppliers in the industry (ibid). Secondly, the
338 development bank provides loans at lower rates for industrial purchases of
339 machinery and equipment aimed at technological development [32]. Apart
340 from the general requirement of LC in Brazil, there are fiscal incentives
341 i.e. tax reductions for compliance, quotas for a preferential purchase of
342 domestically produced goods in government tenders and subsidized
343 financing [35]. Oil companies are required to invest 1 per cent of each
344 field's gross revenue in O&G related R&D- half of the amount in the

345 company's research facilities and the rest in local universities and
346 research institutes accredited by ANP [34].

347

348 **3.3 Norway**

349 In 1959, the North Sea emerged as prominent O&G producing region after
350 gas was discovered off the coast of the Netherlands, [2] which led to
351 series of agreements between the UK, Denmark, the Netherlands and
352 Norway. In 1965, the Norwegian Petroleum law was enacted to enable
353 O&G exploration. In 1972, the government passed a royal decree (article
354 54) to regulate local content thereby ensuring local goods and services
355 are given preferences provided there were competitive (price, quality,
356 service and schedule) [35]. In addition to the above, Goods and Services
357 Office was established to monitor and collaborate with IOCs in developing
358 a domestic industry, encouraging joint ventures and research and
359 development, and establishing targets for indigenous participation in the
360 industry (ibid). Foreign companies were also required to set operational
361 subsidiaries in Norway and also encourage the recruitment of locals. To
362 encourage the use of local goods and services, the government set up a
363 Supplier Development Program which focussed on enhancing production
364 links between foreign companies and indigenous firms which helped
365 created industry clusters [36].

366

367 In the early stages of Norwegian industry, preference was given to
368 companies that partnered with locals' firms. By 1965, it was a
369 requirement for government equity participation in any offshore
370 development [35]. Furthermore, the government established a state-
371 owned company, Statoil to participate in oil exploration. In countries such
372 as Brazil and Kazakhstan, LC is considered as a strategic tool for overall
373 economic development whereas, Norway and the UK had a different
374 strategic vision towards LC [2]. The latter countries focussed on sectoral
375 catch up within their economies. This presupposes that, at the beginning
376 of legislation of LC, there must be a clear vision as to what the policy is
377 meant to do- sectoral catch-up or economy-wide catching up cognisant of
378 the host country's capabilities and capacity. In the case of Norway and the
379 UK, Kalyuzhnova et al. [2] argued that both countries were not at the

380 technological frontier concerning O&G exploration and development during
381 the early phase of exploration. Furthermore, they argued that Norway had
382 no petroleum service and supply industry, no R&D sector and with no
383 sectoral institutions to manage the resource but had an advanced
384 shipbuilding industry, engineering base and the third largest fleet of ships
385 in Europe. Supporting the above arguments, Heum [37] argued that
386 Norway has been successful due to active state involvement and
387 regulation, and the utilisation of existing industrial and engineering
388 capacity and capability to develop an international O&G service and supply
389 industry. In other words, through government interventions, and existing
390 infrastructure and industrial based local companies were developed and
391 propelled to international standards. From a growth perspective, a well-
392 crafted LC can lead to capital accumulation and demand for domestic
393 production with greater economic benefits [2]. In so doing, the policy
394 helps increase the spin-off effects from O&G development via legislating
395 domestic participation in offshore and onshore activities. In order to
396 achieve these economic spin-offs, the policy must mandate or incentivise
397 oil companies and its related businesses to establish their activity within
398 the host country and employ locals as happened in Norway (ibid).

399

400 **4.Methods**

401 Qualitative data in the form of interviews was adopted in the collection of
402 primary data in Ghana. Qualitative research seeks to provide an extensive
403 understanding of people's perspective, opinions, experiences and histories
404 within a specific context [38] which aligns with the objectives of the
405 study. Secondly, the adoption of the above method allows the researcher
406 to delve deeper into the phenomenon under consideration which
407 quantitative does not offer. Therefore, this method was considered
408 appropriate in achieving the objectives of the study. The interviews
409 consist of both one-on-one and online interview. The study starts with
410 reviewing academic publications and policy statements on local content
411 implementation on the study area and the other case countries of Angola,
412 Brazil and Norway. These countries were chosen based on their long years
413 of LC implementation on three different continents. Lesson are drawn
414 from the case countries with respect to the phenomenon under study. This

415 is followed by interviewing stakeholders in the Ghanaian oil and gas
416 industry. Purposive and snowball sampling was used to identify
417 participants who have a deep appreciation of the subject matter, relevant
418 skills and experience and can help in answering the research questions.
419 Semi-structured interviews were, then, conducted using an interview
420 schedule which encompasses questions on the research objectives. In
421 designing the interview schedule as argued by Gill et al. [39], it is
422 essential to ask pertinent questions that will yield more information to
423 answer the research questions. Furthermore, good questions in qualitative
424 research should be open-ended, neutral, sensitive and understandable
425 [40] are points considered in drafting the interview schedule.

426

427

428 **5.Results and Discussion**

429 The qualitative data focus on two broad areas: the relationship between
430 infrastructure and effective local content policy implementation; and
431 policy options for developing resource infrastructure in a host country. On
432 the former question, the research participants agreed that there is a direct
433 relationship between infrastructure and effective local content policy. One
434 respondent said "inadequate infrastructure in terms of erratic electricity
435 supply and poor roads are increasing the cost of business operation.
436 Imagine we (local company) have to buy petrol on a daily basis to power
437 our generators. It is unbearable that we can even break-even".
438 Concerning the institutional aspect of infrastructure, there was general
439 agreement that the O&G institutions perform better than the mining
440 sector in Ghana. One respondent argued "So, I think at the institutional
441 level some capacity has been built and the guys in charge of that are
442 doing ok and the regulation quality is actually not that bad. The oil and
443 gas institutions run better than mining institutions as the former learnt a
444 lot of lessons from the mining sector." Others argued that you would have
445 expected the government to assist in developing industrial enclave in the
446 oil city of Takoradi to provide local services to the oil industry. Rather it is
447 the private sector which has taken upon itself. Also, it was argued that
448 there is no overarching industrial policy for the country and how the oil
449 sector fits in, and the general policy is haphazard. As a result of that, each

450 political party comes to office with its policies, and whenever there is a
451 change of government the new party discontinues the erstwhile
452 government policies. The net effect of all this is that the government of
453 the day tend to use oil revenue as they see fit and for political patronage
454 without following a well-thought-out industrial plan. Consequently, there
455 should be a long-term industrial policy for the country with specific
456 sectoral policies across the wider economy. Furthermore, regulatory
457 institutions and legal framework should be strengthened to attract private
458 participation in infrastructure development. It is these weak state
459 institutions that formulate myopic and electoral-economic strategies over
460 sound and sustainable development strategies with its devastating
461 consequences on the economy. Consequently, strengthening regulatory
462 institutions, will invariably, eliminate unnecessary red-tape and streamline
463 the processes and procedures in the sector application. Secondly, fiscal
464 incentives can be used to complement and attract private investment in
465 infrastructure in key areas of the economy. Thirdly, the government
466 should increase resource revenue for infrastructure development and the
467 development of an industrial base. Here, as one respondent said, "there
468 should be a depart from the current situation in which petroleum revenue
469 allocated to the annual budget is widely spread on many projects without
470 any positive spill-over effects and the lack of status report of oil-financed
471 projects.

472

473 Broadly, the generic lessons from local content implementation from the
474 case countries centred on the following: establishment of regulatory
475 institutions to implement and monitor the policy; Norway's local content
476 policy was predicated on existing state's capabilities which propelled the
477 growth of local businesses in and outside the oil sector; implemented
478 discretionary licensing system, audit oil companies' purchases and offered
479 financial support to local companies; the rigorous development of R&D
480 centres in the case of Norway and Brazil; and independent state
481 institutions have the responsibility to plan, monitor and report LC, and the
482 policy is state-led intervention in all of the countries. Especially in the case
483 of Norway and Brazil, active state involvement and regulations coupled
484 with the utilisation of existing industrial and manufacturing capacity, the

485 above countries developed international competitive oil-related industries.
486 These successes were possible in the above countries because of pre-
487 existing industries and adequate business infrastructure to support
488 domestic companies' growth. In Norway and Brazil, the country was
489 relatively developed as compared to Ghana and Angola before the
490 discovery of oil. In the case of Angola, logistics and transport
491 infrastructure etc. was destroyed the country's 27 years civil war.
492 Consequently, the government has adopted a new policy in the form of
493 "natural resource in exchange for infrastructure". In other words, the use
494 of infrastructure-for-oil trade to bridge infrastructure deficit which
495 invariably will create the enabling environment for the growth and
496 increase the probability of local companies and suppliers. This policy
497 involves trading natural resources such as minerals or petroleum in
498 exchange for infrastructure project normally deemed important by the
499 government. Similarly, Nigeria has introduced Content Development Fund
500 to finance infrastructure development.

501

502 **4. Implication and Concluding Remarks**

503 This paper has attempted to broaden studies on local content
504 development in resource-rich countries in Africa by shifting the discussion
505 from LC mandatory targets (employment, training etc.) to infrastructure
506 development to propel LC development. To that end, policy options have
507 been recommended for bridging the infrastructure deficit of Ghana. Four
508 years of local content implementation in Ghana has seen mixed successes.
509 There is evidence of local firms' participation in the value chain through
510 mandatory JV requirement for foreign oil companies' participation in the
511 Ghanaian petroleum industry. To ensure sustainable development of
512 indigenous firms, local infrastructure must be developed as one of the key
513 enablers for local content development. This paper, therefore, proposes
514 four ways of financing the infrastructure deficit in Ghana to propel
515 sustainable LC development:

- 516 • Strengthening of regulatory institutions and legal framework to
517 attract private investment in infrastructure development.
518 Strengthening regulatory institutions, it will help eliminate

519 unnecessary red-tape and streamline the processes and procedures
520 in the sector application.

- 521 • In future petroleum contracts, a provision should be inserted to
522 allow a percentage of contributions to be made directly to the
523 Ghana Infrastructure Fund. This should be done in collaboration
524 with oil companies and service companies;
- 525 • Encourage a voluntary contribution from oil and gas companies to
526 the Ghana Infrastructure fund for reduced taxes, and a database
527 created to that effect for accountability and transparency.
- 528 • Through public-private partnership (PPP) or through infrastructure-
529 for-oil trade as practised in Angola.

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