Smart Village Model to Iraqi Rural Region

(Strategic Development Road, Silk Road in Iraq/ Case Study)

نموذج القرية الذكية في المناطق الريفية العراقية

طريق التنمية الاستراتيجي / طريق الحرير في العراق – دراسة حالة

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Abstract

Purpose; although Iraq is located in the most fertile place and has two major rivers (Tigris & Euphrates) but unfortunately and due to many global climate changes as well as global warming in addition to political issues; the situation differs and many of Iraqi fertile yards have been decertified that leads to losing most of famers their income resources especially in rural regions.

Findings; most of data showed that there is a gap between desired and actual actions especially those data related to water consumption and wasted ones; electricity supply and employment rates which all affected the dynamic wheel of developing and/ or adopting such smart village model in rural and/ or urban regions.

Research limitation- Implications; many implications are limited current paper where practical ones related limited data and information either from government or from periodic articles, essays in addition to social implications where the cultural environment limited our work to achieve its purposes.

Originality; current study could be a good reference to further researches, works; and assays to enrich both local library and regional knowledge with respect to Iraqi situation.

Keywords; smart village, global warmings, rural regions, strategic development road and silk road.

Introductions:

The state of water sustainability remains fragile, and the need for having qualified continued sustainable water resources management is more important and serious than before, due to environment pollution which increased rapidly where it considered as serious threats; in addition to unsustainable systems of water wasting and non-qualified infrastructure especially that related to watering systems. Moreover; the global needs of water increased and caused another problem which lies in the gap of facing water requirements which leads as well to threatens economic & social environmental development (www.unstats.un.org , 2007). *Climate change and global warning issue is not born today!* it was announced before many decades ago; in 1977 where was an international conference of water hold in Argentia and many calls had been raised for Water Security and (water) is a right of human being to live and sustain in a good way (www.un.org , 2023). Some of studies refer that the world is under the effect of "*Serious Dilemma*" due to the high level of consuming water in a wrong way in addition to global warming that leads to exacerbate this dilemma (Neama et. al., 2023; Neama & Abbood, 2025); where more than (1.7/ Billion) person lack of having essential clear water; and more that (1/2/Billion) person are defecated in open space, in addition to unlimited number of women who spending many hours to get water! For these reasons and more, United Nations calls in 22 of March 2023 for serious steps towards having water security and sewage by 2030 (www.un.org ,2023).

Back Ground:

From many decades ago, the world faced (**Three-dimensional crisis)** i.e., food, energy and water scarcity when consuming is greater than expectation and due to the rapid development of big cities that most of them are already suffered from lack of planning and/ or the ignoring of developing rural or countryside; but these crises were obviously increased especially after COVID-19 and Ukrainian War. Which is important here is that, globalization working on (**the bigger is the best!**) where there are big cities, big companies either locally ones or even internationally ones, educated employee, developed technical systems etc.; while rural sides are lack of those facilities; so, there is a need to discover and develop new cities especially in rural sides to become "Smart Village" that leads rural sides to be more effective and developed than before; which is in fact these are the same of the Global Sustainable Development Goals (17/ Goals) which announced by (https://sdgs.un.org/goals).

Theoretically, the idea is great but in fact it needs unlimited efforts and resources to achieve that; in this context we have to refer that those cities depended on rural resources but still these rural side are neglected! United Nations with their latest report, they assured that half of total global production depends in most cases on environmental capitals when this capital now a day is destroyed either due to over-farming; over- producing of even pollution i.e., tropical forests which considered as a rich region of carbon and/ or biological diversity which is very important for human being; now as United Nations report refers that more than (69%) of tropical forests were destroyed between (2013-2019) and sheep's farms are also damaged in addition to palm trees, soybean trees, wood pulp as well (www.un.org ,2023).

In fact, the first beneficiary is those (*big fishers*) if we can say because they try to do their best towards global trade free duty and working on self-benefits regardless developing environment or rural sides.

In brief, the world has to work hardly on establishing "Smart Villages" which equipped with novel qualified experts and technologies especially which related to water, energy, transportation, internet, networking etc., due to low production costs, low casts of information transfer, to achieve decreasing level of poverty and achieving prosperity among rural societies who represented around (43%/ person) of whole world population (www.alwatan.ae) especially after many experiments in China, Poland, Croatia, Macedonia and other places (Vaishar & Stastna, 2019; Satola & Milewska, 2022; Erceg & Sekuloska, 2022), so it is a good chance for Iraqi rural to get the experiences of others to adopt smart village and ensure development sustainable societies due to its capabilities where Iraq numbered as (9) of global world who has natural sources i.e., (11% of Global Oil reserves) and (9% of Global Phosphate) in addition to other natural resources (www.aljazeera.net) that leads rural areas to be more developed.

Related Literature Review:

Many studies from last decade worked on finding the concept of "smart villages" and its advantages and compared those who adopted their model before and after in rural areas (Satola & Milewska, 2022:2), although it is a vital concept and related to most elements of achieving sustainable environment but as studies refer that there is a lack of understanding and implanting the adoption of smart villages especially in rural places.

Smart villages defined as a *village that supported by unifying every equipment, efforts of both local inhabitants and government which integrated with latest information technology and innovated ideas to transfer local communities into beneficiary ones*; due to the quick response of change that conditioned by investing in natural resources of those rural areas (Clark, 2018). Adopting smart village is considered as a chain of many steps or stages starting by culturing the inhabitants

with the importance of it towards life and environment as well; in order to avoid which called (power resistance to change) especially in those closed communities and then accompanied certain issues with those three threats that mentioned earlier (food, energy, water scarcity). Studies refer that around (1.3/billion) people worldwide have no electricity especially for those people who live in rural areas (Guzal, 2018), meanwhile most of rural areas are described as out of service to access network and being familiar with latest innovations and technologies which related to communication, mobile banking services, financing transactions, or even healthcare updates (Satola & Milewska, 2022). Effective implantation of smart village needs a vision towards achieving high level of education; trusted economic and trusted systems of healthcare to those inhabitants of rural areas which considered as a threat if we compared it with urban life.

Other studies refer that there no fixed model to adopt smart village; which is acceptable here does not mean that it is acceptable there, but at the same time working of reviewing many worldwide experiences is good due to the diversity of cultures, education, systems etc., which helps the decision makers to get the suitable methods to adopt it (Abbood & Neama, 2023); while another study handled “smart” as a fashionable concept especially for those rural areas that are far from any technologies and starting to raise a question either only technologies have to be adopted towards smart villages or there is a need for having multi- criteria approach to achieve it? (Zubizaretta et al., 2016; Vaishar & Stastna, 2019). Lately, smart village as a concept widely perceived in EU especially if this concept is associated with sustainability objectives i.e., energy savings, low- emission economy, reducing the differences between urban and rural societies.

Methodology

Strategic Development Road (Silk Road) Case Study

(Three-dimensional crisis) presented by food, energy and water scarcity considered as the main current crisis in Iraq in addition to other crisis related to many sectors of life due to administrative & financial corruption; presence of various militias; etc. that hinders the growth wheel and stands as a (*steel barrier)* towards achieving development. Since many decades Iraq suffered from many aspects especially after (2003) when Iraq lost most of its infrastructure either in big cities and/ or rural areas (Al Shami & Nouri, 2019); meanwhile Iraq witnessing a decline in achieving sustainable development that limits most of aspects of life especially employment, poverty, bribery, forgery and terrorism as well.

Reviewed statistical reports of Minister of Planning in Iraq for many random periods of time indicated that poverty reached (24.8% - 25% per 2020; 2022), which means that round (10/ million) of papulation had been suffered from standard poverty line, and the report referred those southern governorates are suffered higher that others, where the percentage is between (48-52%) in Theqar; Dywania and Almuthan respectively, especially after ISIS and Covid-19. The table below illustrates the unemployment rate for the Iraqi population aged (15-24) by gender from 1990-2018.

Table (1) Unemployment rate aged (15-24) by gender from 1990-2018.

Year	**Unemployment Rate %**		**Total %**
	Male	Female	
1990	7.2	6.3	7.1
2004	46.0	37.2	43.8
2006	29.7	32.5	30.3
2008	30.1	29.7	30.0
2011	16.7	27.0	18.0

2012	19.2	43.8	21.8
2016	20.1	38.0	22.7
2018	23.4	64.0	27.5

Source: employment & unemployment surveys (2004-2008); Iraq Knowledge Network Survey 2011; Iraq Household Socio- Economic survey (IHSES), 2012; Comprehensive Food Security & Vulnerability analysis in Iraq 2016; Survey of well-being via instant & frequent tracking (SWIFT 2017/2018).

Statistical reports also showed that there is a variation between rural and urban level of education due to a report published in (2004) as in table (2) below.

Table (2) Highest completed Education for (2004)

	Never attended school %	Incomplete elementary %	Elementary %	Intermediate %	Secondary %	Graduate level %
Rural	34	17	31	9	5	4
Urban	18	15	28	15	11	14

Source: Iraq Living Conditions Survey 2004

In addition to another table showed the variation between rural and urban level of labor force participation due to report published in (2004) as tabled below.

Table (3) Labor Force Participation Rate for (2004)

	Out of labor force %	Within labor force %
Rural	55	45
Urban	60	40

Source: Iraq Living Conditions Survey 2004

While, after reviewing the other sector indicators i.e., (industry, water, and electricity) for many years (2009-2018 / 2010-2020) except (Kurdistan Region) that related directly to Strategic Development Road (Silk Road) project requirements; the data are as shown in coming tables.

Table (4) Indicators of Medium sized Industrial factories (2010-2020)

Year	No. of established industries	No. of Employees	Wages & Benefits in Iraqi Dinar	Value of Product in Iraqi Dinar	Value of Raw materials in Iraqi Dinar
2010	56	923	3473906	29081583	14037083
2011	159	2431	12459616	123134752	65852193
2012	218	3357	19846262	187019772	108323107
2013	226	3525	21803572	240847641	143351031
2014	120	1916	10991525	206670686	64203891
2015	92	1491	9610247	82542676	47060833
2016	179	2449	115623809	142863969	84131513
2017	182	2521	16065315	110005382	61605406
2018	198	2624	16913939	132242036	68276457
2020	188	2639	16703386	117509275	65786911

Source: www.cosit.gov.iq

Table (5) Indicators of small sized Industrial factories (2009-2018)

Year	No. of established industries	No. of Employees		Total of Employees	Wages & Benefits in Iraqi Dinar	Value of Product in Iraqi Dinar	Value of Raw materials in Iraqi Dinar
		Paid	Unpaid				
2009	10289	17678	10102	27780	65109035	815953528	389231285
2010	11131	25362	11536	36898	105979212	1556336009	569746849

2011	47281	89646	55739	145385	406615619	3896267446	1964921474
2012	43669	94378	51832	146210	485557552	4567101970	2066295408
2013	27694	60075	31984	92059	288573357	3289710372	1901120490
2014	21809	41304	42968	84272	339409357	1924980220	932469816
2015	22480	42616	24541	67157	261491507	1823968011	978753728
2016	25966	53022	28898	81920	333110574	2079914583	978753728
2017	27856	58954	34690	93644	304412118	2016330483	1008495392
2018	25747	54617	28758	83375	298801546	1939288736	1027279246

Source: www.cosit.gov.iq

Table (6) Electricity & Water (Production, Consumption) Indicators (2007-2018)

Year	Quantity of Electrical power (Million/ Kw. H.)		Quantity of Pure Water (Million/ M^2)		Total Lost Quantity of water (Million/ M^2)
	Production	Consumption	Production	Consumption	
2007	33283	15210	7162	6080	-
2008	-	-	-	-	-

2009	46065	25857	9195	8016	-
2010	48908	27444	9361	8162	-
2011	61136	25735	9543	8168	-
2012	74062	27065	11353	9131	-
2013	58422	45041	11611	9365	-
2014	67768	42431	12062	10364	-
2015	68688	42034	12185	15875	-
2016	80030	38636	14896	12248	-
2017	85508	40771	9363	14220	-
2018	82130	39594	9365	11145	788

Source: www.cosit.gov.iq

Table (7) Electricity Consuming Indicators according to sectors (000Mega. Watt/ Hr.) (2018)

Agriculture	Industrial Power	Gov. Offices	Commercial	Domestic
504	4783	5884	2311	23345

Source: www.cosit.gov.iq

Results

Above mentioned data are very important to understand the situation of rural region in Iraq; and to achieve economic development presented by Strategic Road (Silk Road) and reaching to transfer those rural regions into smart village needs unlimited efforts due to many obstacles that appeared earlier; efforts are not related to increase the quality of life, education, managing system, healthcare, etc. yet! but it needs real serious decision towards *militia control* in specific which weakened the economy and affected the rate of growth and employment as showed in table (1) where in

1990 the unemployment of both (female & male) was (7.1%) while it increased to (27.5%) in 2018, meanwhile education is affected as well as shown in table (2) above. Rural population considered as the most segment that suffered from the turmoil of political & economic situation that transferred on their jobs as shown in table (3). The later tables (4 and 5) respectively show that although many SMEs were established between (2010-2020) but still the capacity of work is under the accepted level due to poverty report reached around (24.8% - 25% per 2020; 2022), which means round (10/ million) of papulation had been suffered from standard poverty line especially in rural regions. While another struggle is shown in tables (6 and 7) respectively due to the high demand of water and/ or electricity through depending on more that (1/3%) of needs on Iran which stands as another obstructive condition towards development.

Discussion

Although the situation is not clear enough to decide either this project could be achieved or not and either the targeted countries will accept the project or not but the main idea is to transfer Iraqi economic from mono-economy to diversified economy and to support, encourage foreign investors to invest in Iraq is valuable (Harbi, 2014). Development is considered as a complicated process due to many reasons; it is a chain that involved both shareholders & stakeholders presented by governments, societies, and environments where all worked together towards achieving continued development in all aspects of life; development doesn't limit yet; it expanded to call for many projects that related to saving next generations from poverty, energy, and other damaged phenomena (AlShami & Nouri, 2019:3- 10).

Most of gulf area and regional periphery countries showed their interest in (Silk Road) especially for KSA, Jordan, Syria, Kuwait, UAE, Qatar, Bahrain in addition to Iran & Turkey; it joins FAO board with Turkey to Europe through land channel

lengthen as (63 km) and the estimated cost is around (17/Billion $) while estimated date of achievement will be on 2028; but accordingly, many sectors have to be more efficient i.e., national security, transportation, healthcare, power supply; technological facilities, etc. especially in rural ground that channel goes through (www.indpendentarabia.com; www.sdgs.un.org). Developing agriculture and manufacturing sectors considered as important as developing earlier mentioned sectors due to the importance of transferring those rural into smart villages and urban cities into developed ones, as happen earlier where European Commission worked on publishing a guidebook on how to Become a Smart Village (Ocsko, 2019), which means that those countries who interest in this project, they have to unify their efforts and work as a *Beehive* to plan first and study the weaknesses and threats sides in parallel with opportunities and strength sides before.

Nevertheless, any development could not achieve without *serious political intention* especially when depending on foreign source of power supply as in Iraq! It is impossible to develop any agricultural or industrial sectors unless using national sources of power; Iraq spends more that (1.34/ Billion $) from 2003 YTD on operational budget rather than sending on developing agricultural or industrial sectors which considered as the *Foundation stone of starting development.*

Conclusion:

In brief; for the short term of development; Iraq is still struggling towards achieving this project where many serious and real efforts have to be taken; without serious political intention to limit the militia control which leads to be unsafe for most of western countries to invest in Iraq and/ or to establish any global projects, directed independent political decisions to invest in national energy resources; expanding the horizon of investment to other developed and/or developing countries rather than depending on Iran & China is very important due to limit their control on Iraqi

consuming market and to increase the opportunities to compete rather than acquisition and monopoly policy; in addition to manage the financial agenda with high level of transparency; working on developing the technological systems of every dynamic sector especially those related to developing economic process i.e., security systems, transportation, information technology, increasing banking responsibility projects especially towards global warmings and water crisis; in addition to developing educational systems as environment & society needs to reach the target of United Nations to decrease the disparities between rural and urban regions.

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