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From social to environmental injustice, the impact of Zimbabwe's Fast Track Land Reform Programme (FTLRP) in Chiredzi District.

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Abstract

In the early 2000s, Zimbabwe embarked on the Fast-Track Land Reform Programme (FTLRP) with a primary objective of correcting historical injustice of access to land. The programme entailed redistributing white-owned farms to black farmers under subsistence A1 and commercial A2 scheme. This paper discusses the ways in which the FTLRP addressed issues relating to environmental justice (EJ) in the A1 farms of Chiredzi district. While FTLRP is applauded for ushering in a racially just society with equal access to land, research findings suggest that the programme had not fully addressed questions of EJ. A combination of environmental factors such as climate variability as well as institutional and technical logistics for the effective management of land transition from white-owned to black-owned farms were not instituted, which negatively compromised the preparedness of the majority of small-scale black farmers to take on the massive responsibility of addressing environmental burdens. It is thus recommended, that there is an urgent need to rethink and redesign the FTLRP so as to embed in its implementation broader attributes of social and environmental justice. Such an approach will facilitate the establishment of systems and mechanisms through which skills development and knowledge transfer on natural resource use can be fostered to bring about sustainable development

Key Words: *Land reform; Environmental rights; Chiredzi*

1. Introduction

African colonisation supported with unjust legislation led to the creation of exclusive homelands for Africans in environmentally poor areas (Kariuki, 2009) thereby exposing them to naturally occurring

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environmental burdens, later worsened by overcrowding and undesirable land-uses such as overgrazing (Adeola, 2001; Tsabora, 2010). A poor environment affect rural people's environmental rights and EJ since access to healthy and safe environment is also dependent on the area's environmental condition. The environment is also the space 'where we live, work, play, worship, and go to school as well as the physical and natural world' (Bullard, 2005). If EJ is to be enhanced, peoples' homes, workplaces (including farms) and schools and the biophysical environment should be healthy and ecologically safe. Southern African post-independent governments inserted a constitutional clause on environmental rights and implemented land reforms to redress colonially instigated injustices (Glinski, 2003), promote sustainable development (Kariuki, 2009), achieve balanced society (Mazhawidza & Manjengwa, 2011) and EJ to the formerly excluded poor peasants (Tsabora, 2010). Sustainable development goes beyond responsible use of natural resources to include access to environmental rights and resources (Arendse, 2012). Embedded in the term sustainable development is the EJ concept which is advocated by the UN Draft Principles on Human Rights and Environment through a call for all people to enjoy the right to healthy and ecologically safe environment (Sherpa, Sheperd and Vidal, 2014).

Zimbabwe's FTLRP is credited for radically transforming 'raced' society as there is now a wider mix of beneficiaries (Matondi, 2012, Tom & Mutswanga, 2015). 'Celebration' of land reforms such as FTLRP for having addressed social injustice makes one to assume that environmental injustice was dealt with thereof since environmental and social justice are inseparable (Kidd, 2008 in Tsabora, 2010 and Sherpa et al, 2014). So, if redistributive land reform is celebrated for promoting a balanced society, it therefore follows that it dealt with environmental burdens faced by the indigenes. However, Mushunje (2000) is of the view that while land policies are correcting colonial injustices, new post-colonial injustices are emerging. Redistributive land reforms are changing the racially skewed agrarian structure but creating new problems (Mkodzongi & Lawrence, 2019) like socio-ecological injustices since no policy that can correct past injustices but not produce new injustices (Boudreaux, 2010). Little is achieved if justice turns out to be symbolic, piecemeal and leaves resettled communities

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with one form of injustice or further aggravates previous injustice (Cifuentes and Frumkin, 2007). It remains unclear whether FTRLP had also addressed both social and environmental injustice since many studies (Mazhawidza & Manjengwa, 2011; Matondi, 2012; Tom & Mutswanga, 2015) have superficially unpacked the link between land reforms and social justice despite social and EJ being intertwined. More importantly, few researches have sought to link redistributive land reforms to EJ though land reform is one integral policy to 'liquidate' colonially imposed environmental injustices on indigenes (Tsabora, 2010). This paper therefore examines an argument that state programs (land reforms) can entrench or resolve the problem of environmental injustices (Williams & Mawdsley, 2006) and affect the extent of exposure to environmental burdens among its citizens (Tsabora, 2010).

2. Literature Review

2.1 Contextualizing environmental justice and land reform in Africa

While the EJ concept began in USA, Africa's colonial history reconfigured it beyond principles of fairness and meaningful engagement to equal access to natural resources and enhancement of quality life through access to support services to address colonial land dispossession effects. It therefore means African land reforms are not only critical in enhancing land access but also advance EJ by enabling access to other natural resources such as pastures and water (Matsa, 2011; Dabale, Jagero, Chiringa, 2014) and social services. Soon after the launch of FTLRP, the Zimbabwean government pledged to provide ancillary support to A1 farmers (Government of Zimbabwe (GOZ) 2001). The following sections discuss perspectives of land beneficiaries on the impact of post-colonial land reforms on EJ.

Access to arable and grazing land during the post-colonial era

Colonization of African countries was followed by formulation of policies that relegated Africans into reserves where 'stones grew better than grass' (Musemwa & Mushunje, 2011; Kwashirai, 2017). Post-independent governments had a huge task to achieve EJ and depopulate communal areas through provision of productive land they had been denied during colonial area. Zekele and Mberengwa (2012) and Alemu (2015) observes that Ethiopian land reform had given Dawuro, Metema and Decha settlers a place to call 'home' and fertile

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arable land though two hectares were too small for farming communities. Households were highly dissatisfied with arable and grazing land given, arguing that government had given more prominence to equity at the expense of efficiency. Resettled Namibian livestock farmers who accessed land under Farm Unit Resettlement Scheme (FURS) and Group Projects were satisfied with land size accessed for livestock production though arable land was small (Werner & Kruger, 2007).

Mbereko (2010) and Muchara (2010) further reports that Mwenezi and Chirere resettled communities in Mwenezi and Zvishavane district in Masvingo and Midlands province respectively were satisfied with bigger fields with better soil fertility than their communal counterparts. Satisfaction with land sizes indicates that the programme had managed to give spacious plots to resettled communities that were once crowded in communal areas. FTLRP had taken out some Zimbabweans out of crowded marginal lands to extensive land in fast-track farms (Mangeya, 2017). However, Matsa (2011) argues that at Beacon Kop farm, many A1 settlers accessed fields with sandy and unproductive soils that required fertilisers to get a meaningful harvest. Chirozva (2009) further reports that northerners of Chizvirizvi A1 scheme, Chiredzi district got less fertile and small arable land which forced them to rent land from southerners in and out of the scheme. FTLRP was a lost opportunity to achieve EJ as settlers failed to get productive land they had been denied during the colonial period. It is indisputable to say in some areas, 'fast track' programme failed to address problems of overcrowding and resource scarcity (Clover & Eriksen, 2009) as some communities were resettled in poorly endowed areas producing a semblance of communal areas (Harts-Broekhuis & Huisman, 2001). Resettlement in marginal areas during FTLRP 'birthed' new social, economic and ecological burdens instead of addressing old colonial injustices (Kori, 2013).

The dispossession of farming land and cattle from indigenes through colonial legislation as a travesty of all forms of justice (Maposa, Hlongwana & Muguti, 2013). Chiwera (2000) in Marongwe and Mabhena (2010) further reports of an increase in grazing resources in Gutu South and Kondwane A1 scheme in Gutu and Umzingwane district respectively though they were being poached by adjacent communal households despite being

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excluded to graze their livestock. Prior to the FTLRP, owners of cattle and wildlife ranches jealously guarded their farms against stray communal livestock and 'poachers' of environmental and grazing resources (Njaya & Mazuru, 2014). However, increasing landlessness among heirs of first-generation land beneficiaries was leading to sale of common grazing land by customary leadership thereby imposing environmental injustices upon their subordinates (Mkodzongi & Lawrence, 2019). Post-FTLRP, resettled households became the new architects of environmental injustice against their communal counterparts, a phenomenon Maphosa, et al., (2013) describes as 'marching forward to the past'. Actions by land beneficiaries in Kondwane and Gutu South A1 schemes went against principles of environmental justice that urged vertical and horizontal actors to allow equitable access to environmental resources by all people.

2.2 Beneficiary access to water and sanitation post-settlement

During the colonial era, indigenous blacks were denied access to surface and rainwater by being moved to poorly watered reserves despite 70% of their livelihoods being linked to access and use of water (Mubaya, 2009). Stephens, Willis and Church (2018) argues that local people in India experience water shortages due to water diversion from rivers and dams to factories using pipelines or canals thereby affecting the rural poor whose livelihood systems are dependent on agriculture. Tsabora (2010) is of the view that effective land redistribution programmes aims to achieve EJ and in particular equal access to formerly 'raced' natural resource havens. Dabale, et al., (2014) further argues that access to land was important if one had to access other critical resources such as water and wildlife. A study by Bahry (2010) of Metema in Southern regions of Ethiopia reveals that most people collected unclean water from rivers as most hand pumps were non-functional. Land redistribution in Metema had offered them access to water as natural resource but compromised their right to safe water. At Mupfurudzi farm in Shamva district, most households had blair toilets and waste disposal pit latrines thereby promoting a safe environment though they collected contaminated water from unprotected wells (Tom, 2015). In addition, the majority of the households at Athlone and Chirere A1 farms in Zishavane and Murehwa district respectively used the bush toilet, thereby contaminating unprotected wells and dams which were the

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main sources of domestic water (Mbereko, 2010; Mandizadza, 2010). Though water as a natural resource was readily available for the resettled households in the two A1 schemes, it was a health hazard as it was contaminated with deposited faecal and other eroded matter thereby contributing to piecemeal achievement of environmental rights and subsequently environmental justice.

The water and sanitation situation in Chirere A1 scheme in Zvishavane district was bad as main river was seasonal and the only two functional boreholes were inadequate (Mbereko, 2010). In many resettlement schemes, environmental justice had been achieved to some extent as households got water for their livestock and other domestic but unsafe for human consumption. Lack of safe water denied settlers access to their environmental right i.e right to a safe and healthy environment. Mubaya (2009) reports that FTLRP had turned Chishawasha settlement area into 'biblical Canaan' as many households own private water sources at homesteads and in gardens. For these settlers, FTLRP was more just the redistribution of land but productive land and access to water rights (Mangeya, 2009). Equal access to natural resources (land and water) and the right to clean environment (water) were some of the central principles of EJ (Kidd, 2008). While FTRLRP had addressed water problems for the new settlers in Chishawasha, it had 'heightened' these problems and brought unsuitable arable systems in some parts of Masvingo province that have been designated as traditional homes of specialized land uses like wildlife and sugarcane production. Chitsa community was resettled in Gonarezhou national park despite the rainfall pattern and soils being unsuitable for crop farming (Marongwe & Mubvami, 2004). The new government became more reckless and unjust by resettling poor indigenes from marginally dry regions into new and poorly watered areas, a condition described as 'marching forward to the past' (Maposa, et al., 2010) when the colonial government 'resettled' Africans into environmentally degraded reserves (Musemwa & Mushunje, 2010). Lack of proper land use planning sacrificed environmental sustainability (Maposa, et al., 2010) and EJ as households lacked rain and surface water. FTLRP brought racial parity but 'thinly' addressed social and environmental injustices as they were inseparable and predicated on access to sufficient rain and drinking water.

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2.3 Beneficiary perspectives on access to other resources post-settlement

African countries' concept of EJ goes beyond equal access to natural resources to include quality life through access to other resources such as safe water, food, health, shelter. Tsabora (2010) articulates that policies like land reform promote access to a range of environmental and social resources that promote a healthy and safe living environment. Access to the social resources require government intervention through social services provision programmes. Zimbabwe's FLTRP is the only phase of land reform that had no social service policy, thereby affecting access to safe and quality life (Tom, 2015).

For many African countries, the redistributive land reform was one post-colonial policy to promote food justice, a component of EJ among the rural households. Dabale, et al., (2019) reports that for many African countries, food security has been at the centre of all their post-independence developmental goals and strategies that include land reform as facilitates not only access to land but also food. FAO (2009) describes food security as a multipronged concept that include food availability, adequacy, and accessibility. Walker et al., (2010) and Hilmers et al., (2012) argues that food availability, adequacy and accessibility are components of the food environment hence they affect environmental justice and health. Zeleke and Mberengwa (2012) and Alemu (2015) explains that cereal production in Dawuro, Decha and Metema regions respectively had increased and meet annual food requirements for majority households, an indication that food justice and security had been met post resettlement. A1 households on Beacon Kop farm, Shurugwi district harvested maize in excess of annual and subsistence needs in non-drought years or better watered A1 plots (Dekker 2004a; Matsa 2010) thereby contributing to temporal changes in food justice (Dekker & Kinsey, 2011; Dabale, 2019).

While education facilities were also important in promoting the right to education, their outdoor and indoor surroundings affected EJ, health of learners and teachers. Tom (2015) is of the view that the availability, accessibility and quality of education facilities are key factors of the education environment useful to evaluate development programmes such as the FTLRP. According to Sampson (2012), the school's building material, heating and cooling systems and the adjacent environment around the school can create

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many threats to environmental health and justice. Bahry's (2010) and Alemu's (2015) findings in Decha and Metema regions of Ethiopia shows that residents were dissatisfied with many variables of the education environment. Facilities being used were not secure and safe for learning despite the school being the second 'home' for learners and teachers. The Environmental Policy Agency (EPA) (2014) of USA reports that environmental justice in schools is only achieved if students and teachers have a healthy outdoor and indoor environment to live, learn and work in. At Mupfurudzi Farm, Shamva District, Zimbabwe, turned a farmhouse into a primary school leading to overcrowding as it had been built for a family not large classes, forcing other children to access education in the surrounding communal areas (Tom, 2015). Children had to walk daily an average of 26km to and from school through the forests further exposing them to wildlife security problems and health problems during hot, cold or rain days. The lack of proper land use planning during FTRLP is believed to have 'sacrificed African peasants (including students) on the altar' (Maposa, et al., 2010) by exposing them to an unhealthy educational environment.

Many empirical studies by Clover and Eriksen (2009), Kori (2013), Chinamatira et al., (2016) and Williams et al., (2016) on the interaction of FTLRP settlers and the environment have been heavily biased towards the environmental sustainability of the programme. Some have portrayed FTRLP as an accomplice while others have painted it as an 'enemy' of environmental sustainability. While there are copious researches on the social and environmental impact of FTLRP, very few have paid attention to the reverse dynamic, which is the influence of FTRLP on environmental rights and justice. 'Celebration' or attack of FTLRP for influencing social justice is misinformed without an examination of its impact on EJ since the two are intricacies. Only a handful of these studies (Tsabora, 2010, Gandiwa, et al., 2012) have superficial detail on how land reforms had influenced access to EJ previously denied by the colonial governments. Therefore, this study concerns itself with the influence of the unplanned and 'chaotic' FTLRP on EJ of A1 settlers in Chiredzi district.

3. Materials and Methods

This study was carried out in Chiredzi district's Peter Wenhamo (PW), and Maware A1 farms located in Masvingo province. These settlement areas are in

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agro-ecological region V characterised by unreliable rainfall patterns, seasonal droughts and severe dry spells during the November to March rainy season (Chiremba and Masters, 2003). PW and Maware farms share boundaries with specialized land uses like sugar plantations and wildlife/tourism (Chiremba and Masters, 2003). A case study research design was used to examine the state of EJ post-FLRTP in Chiredzi's A1 farms. It was chosen because it helps to explore a program (FTLRP) in-depth (Creswell, 2003) and it also allowed the collection of a lot of data for triangulation using many tools such as interviews and observations. The target population of 70 resettled household heads, 35 from each A1 farms were selected. These were selected using stratified random sampling to ensure each A1 scheme is proportionally represented. Key informants like officials from Agritex and village chairpersons were selected using purposive sampling to hear expert knowledge on environmental justice post-FTLRP. Data from interviews was presented as paraphrases or direct quotations while that from observation was presented as pictures. Questionnaire derived data was put in form of charts. Views of land beneficiaries and key informants were also triangulated with scholarly work from the literature review.

4. Findings and discussion

4.1 Perspectives of beneficiaries on EJ in relation to access to natural resources

The concept of EJ in African countries is assessed based on access to natural resources such as land since the indigenes were denied access through relocation to marginal areas. Therefore, provision of agricultural land to formerly disenfranchised landless is meant to correct historical and environmental injustice. Though previously denied access to agricultural land, A1 settlers in Maware and PW farms revealed feelings of satisfaction with acquired land. A scrutiny of Table 1 suggests that an estimated total of 57.2% households interviewed reported a significant correlation between land ownership in A1 farms with increase in size, fertility of arable land as well as better topography of farming land. However, a further 13.9% reported having accessed poor arable and grazing land. Based on information in Table 1, it is apparently plausible to argue that access to land through had FTLRP had reversed colonial induced environmental injustices as settlers had been allocated large prime land which

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was once the preserve of the colonial white minority. This observation is partly supported by Matsa (2011) who reports that Beacon Kop settlers were satisfied with the land size though the given fields had sandy and unproductive soils that required fertilisers. Feelings of piecemeal resolution of EJ are further supported by Zekele and Mberengwa (2012) who argues that Dawuro, Metema and Decha settlers in Ethiopia were satisfied with land quality but felt that the two hectares given was uneconomic for arable farming. Thus, overcrowding and poor harvests on the allocated land remained the order of the day thereby perpetuating environmental injustice post-independence.

Table 1. Access to farming land post-FTLRP

Response	Number	%
Large-sized and fertile arable land	67	32.2
Better topography	52	25.0
Improved nutritional value and size of grazing land	60	28.9
Decline in arable and grazing land	29	13.9
Total	208	100

Source: Survey data

Colonial land policies bundled people and their domestic livestock in communal areas contributing to shortage of grazing land, overgrazing and some environmental burdens that befell on the local people. Further scrutiny of Table 1 suggests that an estimated 28.9 of the interviewed research participants appreciated the size and quality of community grazing land. Based on information collected during transect walks and Table 1, ownership of private grazing land on arable plots together with common grazing land seems to have developed positive feelings towards FTLRP because it had addressed an environmental injustice imposed on communal residents due to colonially induced overcrowding. Building on these findings, Njaya and Mazuru (2014) and Chiwera (2000) are of the view that FTLRP had increased the size of grazing land for resettled households in both A1 and A2 schemes of Gutu district. This is further supported by Matsa (2011) and Dabale et al., (2014) who explains that land access by the landless determined access to other natural resources like common grazing land.

While a significant number of research participants were satisfied with size and quality of grazing land, scrutiny of Table 1 shows a further 13.9% which was

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unsatisfied with both grazing and arable land. Edifying this information in Table 1, male participant from Maware farm stated:

> *"Initially we had extensive communal grazing land, but we are being betrayed by village chairpersons. They are subdividing it to newcomers and grown-up children for a fee. It is also worse in this place because of increased demand for irrigation plots along the canal".*

Along this continuum, an Agritex officer further revealed:

> *"Some farmers are to blame for the shrinking grazing land as they have insatiable needs for land. They continuously increase their arable plots into grazing land, forests and streambanks. Village chairpersons cannot control them since they are also doing the same".*

Although land beneficiaries were initially 'asserted' with extensive arable and grazing land, one would speculate based on information in Table 1 and the above perspectives that greedy and corrupt tendencies by the local leadership and their subordinates was reversing gains achieved by FLTRP in addressing grazing land shortages, an environmental injustice imposed on local population during the colonial period. Furthermore, it would not be an exaggeration to argue that the problem is traceable to the spontaneous nature of FTLRP which side-lined government institutions that dealt with land pegging and conservation during FTLRP thereby recreating new injustices that had started hounding some households where subdivision of communal grazing land was rampant While FTLRP had undone the environmental burden of providing fodder to livestock, village chairpersons became the new agents recreating environmental injustices through the sale of common grazing land closer to the canal to needy households. Thus, the horizontal power gap that existed between locals and their local leadership made the latter to be unaccountable to the local people and their actions unstoppable. Edifying this observation, Mkodzongi and Lawrence (2019) are of the view that the sale of common grazing land by customary leadership to the landless was reversing the gains made during FTLRP. While shortage of grazing land in communal areas was linked to segregationist colonial land policies that crowded people and their domestic animals, local leaders and their subordinates in A1 farms were recreating new 'old problems' by extending plots into

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grazing lands that sustained livestock production.

Although colonial land policies drove people into arid places, land reforms were hoped to address such injustices by resettling households in better watered regions or with investment in water infrastructure. Chiredzi settlers felt that despite being resettled in an arid region, government had not complemented land access with water infrastructure or equipment to harness water from the canal and perennial river that passed through Maware A1 farm. An elderly male participant commented:

> *"Water for the people, crops and our livestock is a perennial problem. Gardening is also a problem except for the few settlers who got land along Chiredzi River and the canal. If I had land of my own in the communal area, I would not have moved to this place, it's dry".*

Edifying the above perspective, another female participant from PW stated:

> *"The water situation in PW is bad. We have no canal or perennial river like in Maware farm. We rely on some boreholes and water points (mufuku) dug on the riverbed. However, for human consumption and bathing, people prefer river water because it is 'soft' and rusty free unlike borehole water which is 'hard', brown coloured and salty. Borehole water is only for our domestic animals".*

Though land access during FTLRP had created feelings of increased personal worth and self-esteem among beneficiary households, one would speculate based on the above perspectives that, there seems to be growing disillusionment with FTLRP as households realised that access to land only without water played a permissive role in producing sustainable livelihoods and reduction of 'poverty' of environmental rights. Lack of access to reliable rainfall/raw water and safe water seemed to be a double tragedy for beneficiary households as lack of the former affected access to social rights (right to water) while the latter infringed on their right to safe environment (water) which is the bedrock of EJ. While some few households who got land near the Chiredzi river and canal had their water rights met, the water even from boreholes was unsafe and salty and contaminated thereby infringing on their right to a safe and healthy environment. Edifying this observation, Bahry (2010) reports that Metema settlers in Ethiopia collected unclean river water because of mal-functional hand pumps which then

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affected their substantive environmental rights.

Government's failure to provide Chiredzi A1 settlers with supportive infrastructure to harness water defeated the agenda of EJ anchored on inclusive use of locally found natural resources. EJ clamours for the proportionate access to environmental benefits and burdens across sections of society but many A1 households that lived in Maware A1 farm less than 40km downstream of Manjirenji dam were not benefiting from the canal siphoning water to the wealthier A2 out-growers and private-owned Tongaat Hullet sugarcane plantations further downstream. Edifying this observation, Stephens, Willis and Church (2018) reports that in rural India, there is disproportionate access to water as bottling companies divert river water to their factories while low-income rural groups who depend on agriculture face water shortages. This further supported by Mubaya (2009) argues that while colonial land policies denied indigenous blacks access to surface and rainwater by moving them to arid native reserves, FTLRP seemed to have 'marched beneficiaries forward to the past' by resettling them in dry agro-ecological regions and failing to provide water infrastructure despite their livelihoods being linked on use of water. Tsabora (2010) and Dabale, et al., (2014) articulates that land redistribution programmes will only achieve EJ if there is equal access to natural resources like land and other critical resources (such as water) that allow productive use of the land. From a point of view, there seems to be disproportionate access to water benefits and infrastructure by established commercial farmers and A2 households at the expense of subsistence A1 settlers in the district.

Although FTLRP is criticized for lacking a policy on provision of water infrastructure, it seems like beneficiary households' 'insurgent practices of citizenship' (violence) during farm invasions and unsustainable farming practices in the study sites had recreated water woes previously faced in communal areas. One Agricultural Extension (Agritex) officer from PW farm explained;

> *"This farm had a diesel pump at Matedzi dam that supplied wildlife with water through a network of underground water pipes. This infrastructure was destroyed during farm occupations…..some pipes are being sold to irrigation farmers in Maware farm. Matedzi dam is now*

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silted because of their poor farming methods".

The above remarks by the Agritex officer makes one to speculate that while 'insurgent forms citizenship' had achieved EJ through access to land as a form of natural capital, it had also 'slowed' comprehensive achievement of the same through destruction of water infrastructure that had been invested by the former white farmer to turn land into a sustainable livelihood. While water challenges seem to be directly linked to 'insurgent forms of citizenship' and poor land management, these can be traced back to the origins of FTLRP when government side-lined technical institutions that could have led to land-use planning and orderly acquisition of land and water infrastructure.

Colonial dispossession of better watered areas from the indigenes affected households' access to ecosystem provisioning services since these are dependent on rainfall amount. Provisioning and supporting ecosystem services are natural resources (Ochola, et al., 2010), hence their access helps in addressing colonially 'engineered' environmental injustice. A study of Table 2 shows that wood fuel was the most accessed (32%) ecosystem service followed by mopane poles (31%) and edible insects and rodents (12%). Table 2 further indicates that beneficiary households collected traditional medicine, humus, other ecosystem services (such as elephant dung) and fruits but they were not widespread. Based on information in Table 1 and 2, it would be apparently valid to argue that FTLRP seemed to have offered beneficiaries with access to large-sized arable and grazing land, plenty of wood-fuel and mopane poles but the dry climate in the study sites limited plant diversity, hence poor variety in fruit trees, medicinal plants and decomposition of litter into humus. It can be further be argued that, while resettlement in an arid climate was an environmental injustice in itself, it also militated against access to other ecosystem services that were dependent on rainfall amount.

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Table 2. Ecosystem provisioning services found in A1 schemes

Response	Number	%
Improved access to humus	10	4.8
Improved access to edible insects & rodents	26	12.5
Improved wood-fuel availability	67	32.2
Improved access to fruits	06	2.9
Improved access to traditional medicines	19	9.1
Improved access to mopane poles	65	31.3
Improved access to other ecosystem services	15	7.2
Total	208	100

Source: Survey data

During interviews with some female beneficiaries, it seems like elephant dung was one ecosystem service gathered for its medicinal value. Edifying this observation, a mother of three children from PW farm reported:

> *"I collect elephant dung for personal use and resale to outsiders…many women know its reproductive value. I have been using elephant dung….and it has helped me to deliver safely at home. A lot of negative stories are being said about it, but it is helping many women in A1 farms and communal areas*".

Underscored in the above quotation is the significance of elephant dung not only for its medicinal value in dealing with women's reproductive health problems but also as a source of income to some women that were resettled within wildlife zones. For most women, elephant dung was used to 'normalise' abnormal menstrual periods and also enlarge the birth canal of pregnant women to reduce delivery complications. While local women felt land access during FTLRP had afforded them access to an important ecosystem service with medicinal value, this compromised women's right to a healthy and safe environment and subsequently environmental justice. Edifying this observation, a village health worker from PW farm reported:

"The use of elephant dung to address women's reproductive health problems is an unproved old cultural belief ingrained in societies. However, we regularly educate women to seek reproductive health assistance from

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health centres because use of elephant dung can put their lives and health at risk. It's better to sacrifice and embark on the 'great trek' to the clinic than to sacrifice one's health"

Building on the above statement, it can be argued that lack of investment in social services like health facilities in the study areas seems to expose poor women to unhealthy practices through the use of elephant dung which had not been scientifically proven on its medicinal value. Living in an environment that lacks a health centre is in itself an EJ, but for women, it was worse as unavailability of a clinic forced them to use unsafe and unhealthy practices to address their reproductive health challenges.

4.2 Beneficiary perspectives on access to other resources

Environment can refer to the space where people live, and environmental justice is achievable if the space has sanitation facilities. A study of Table 3 implies that an estimated total of 61.5% research participants used unsafe and unhealthy sanitation methods ('bush' toilets and other (improvised 'blair' toilets).

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Table 3. Sanitation systems used by households

Sanitation system	Number	%
Blair toilet	25	35.7
'Bush' toilet	30	42.9
Flush toilet	02	2.8
Other	13	18.6
Total	70	100

Source: Survey data

Judging on information in Table 3 and observation of some sanitation facilities, it would be plausible to argue that use of the 'bush' toilet had a boomerang effect on settlers' right to safe environment since it led to contamination of river water which was the main source of drinking water in the study sites (Pers.com, 2020d). Furthermore, some households regard a toilet as a physical wall to make user out of sight, thereby relegating health and safety issues during their construction. It would not be an overstatement to conclude that many of the toilets in A1 schemes of Chiredzi seems to have been built hurriedly or without technical support from environmental health technicians as many had not been roofed while some 'toilets' were built using grass and poles put across the pit and 'toilet' sides. These were vulnerable to attack by ants and could subsequently curve in, thereby affecting user's right to a secure and safe environment (sanitation facility). Settlers had to shoulder the responsibility to provide themselves with sanitation facilities after realising that the government had reneged on its pledge to provide essential services like blair toilet per household (GOZ, 2001). While some settlers use improvised 'toilets', transect walks further revealed that many households use bush 'toilets' when working or night 'guarding' of crops against crop raiders since residential areas are a distant from arable plots. One can argue further that while use of 'bush' toilets when guarding crops had a boomerang effect on the settlers' right to a healthy environment, night vigilance of crop raiders while in poorly constructed 'guardrooms' was also an environmental health hazard as it exposed 'night guards' to lethal species, bad weather further worsening the right to live in secure, safe and healthy environment.

4.3 Housing quality and building material in A1 farms

For the right to housing to positively influence EJ, the indoor and outdoor environment of the house should be secure, promote health and comfortable living. An assessment of Table 4 suggests that an estimated 51.1% of the settlers interviewed

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had built houses using cheap material such as poles, dagga and thatching grass. A further 41.4% had farm brick houses under thatching grass or roofing sheets.

Table 4. Type and quality of building material (N=70)

Building material	Number	%
Cement brick	10	7.5
Farm brick	55	41.4
Poles and dagga	68	51.1
Total	133	100

Source: Survey data

If the environment includes 'where we live' (Bullard, 2005), it is undeniable that housing is important for the achievement of EJ. Based on the information in Table 4 and Fig 1, one can argue that the poor quality of housing in Chiredzi A1 farms was a negation of land reform objectives of addressing historical and environmental injustices associated with poor housing. Building on this observation a male research participant from Maware farm in his early sixties commented:

> *"When we got land, we had many competing interests such as acquisition of equipment, draught power, land clearance and building good houses. We 'postponed' the later, hoping to use proceeds from farming. Unfortunately, the government is now buying our cotton using worthless 'ecocash' (plastic money). This year, we were paid with groceries…….then you expect farmers to build good houses? Every year, tobacco farmers are paid using forex….this is unfair"*

While access to secure and safe housing was a dream for many A1 settlers in Chiredzi district, one would speculate based on the above perspective that the poor economy and cotton producer policy together with lack of ancillary support had put lot of burden on beneficiaries' shoulders forcing them to forgo better housing to activities that turn land into a sustainable livelihood. Many of the settlers had to improvise and built houses using cheap material (Fig 1) though these structures were potential health hazards in case they curve in due to termite attack, heavy wind or rains and veld-fires which were common due to high fuel load in resettlement areas. The above remarks are further an indictment on the government for the disproportionate treatment between A1 cotton and A2 sugarcane out-growers/tobacco famers countrywide with regards to the unfair producer prices and

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payment models making poor cotton farmers unable to build houses that meet their right to a safe and secure environment. Building on this observation, EPA (2014) argues that such actions violates principles of EJ which advocates for access to safe, healthy and quality housing free from potential hazards to residents' health (EPA, 2014). Thus, environmental injustice can occur even in the absence of ill-health or injury and also where the environment (housing) has the potential to cause such adverse effect. Transect walks in Maware and PW farms further revealed that many beneficiary homesteads lacked enough houses forcing girls and children to sleep in kitchens with poor ventilation, thereby exposing them to the heat and smoke absorbed by the walls and thatching grass. Edifying this observation on gender differences in environmental exposure, Stephens, et al., (2018) argues that women and children face the greatest environmental exposures to poor housing conditions thereby infringing on their right to a safe and healthy environment (housing).

Figure 1. Quality of some houses in A1 farms

Source: Survey data

4.4 Access to health care service in relation to EJ

The African concept of EJ is not only pinned on access to natural resources such as land but also other resources such as health centres that enhance the poor's quality of life. A scrutiny of Table 5 suggests that an estimated 78% of research participants indicated that both health facilities and information was unavailable in the study sites.

Table 5. Beneficiaries' perspectives on quality of health services

Response	Number	%
Health facilities at a convenient distance	02	4.8
Adequate health personnel & equipment	02	4.8
Improved infrastructure	05	11.8

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Environmental health information readily available		
Poor or unavailable health services & infrastructure	33	78.6
Total	42	100

Source: Survey data

Based on the information in Table 5, it would be plausible to argue that access to land without access to supportive resources such as health facilities and information influenced access to substantive and procedural environmental rights respectively. Given the prevalence of malaria, poisonous species from the former cattle ranches and diseases due to human wildlife coexistence such an environment was a threat to the safety and health of A1 settlers. Lack of health facilities where environmental health officers operate from denied A1 settlers procedural rights such as access to environmental health information on mechanism to prevent malaria, counter snakes bites and proper construction of toilets to enjoy their right to a safe environment. Edifying this observation, Glinski (2013) reports that an environment is rendered harmful to healthy if there are potential threats or even if none has been injured and this does not need to proof of damage to health or well-being. While government had 'asserted' A1 beneficiaries with land and further pledged to provide them with enabling support and essential services such as clinics (GOZ, 2001), failure to honour its obligations, justified Boudreaux's (2010) and Mkodzongi and Lawrence's (2019) views that there is no single policy that can correct a past injustice but not produce a new injustice. Thus, FTLRP had led to piecemeal achievement of EJ by enabling access to land without essential services like clinics that enhanced people's right to a healthy environment.

4.5 State of educational institutions post-settlement

Although government had not put in place a social services policy to construct schools during FTRLP, in some farms beneficiary households had to turn farmhouses into schools. Despite these efforts, A1 settlers in Maware and PW A1 farms were still dissatisfied with accessibility, physical outlook of the few schools available. A male research participant aged between 50 and 60 from Maware farm stated:

> *"In some areas, you will only believe it's a school once you see children in uniforms because the structures are unbefitting. At Sebhanani primary school, children*

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learn in structures built using poles and dagga while at Chikwirire primary, they learn in barn. Very few children go to secondary level because there is only one 'satellite' secondary in the (Maware) farm. Serious parents send their children to schools in communal areas of origin or 'lodge' their children around Chikwirire 'satellite' secondary or schools outside the farms"

Complemented with the perspective above and Fig 2 shows the deplorable 'school structures' with cracked and rotten walls, weak roof beams, low height thatched roof, improvised window 'panes' and low hanging branches of large trees over building roofs thereby creating an environmental hazard in case of lightning, fires, heavy wind or rain. These educational facilities were unsafe for learners and teachers despite the school being their 'second home'. Most schools in Chiredzi A1 farms were not national examination centres due to poor infrastructure, forcing students to write examinations outside farms. One can then query why the same school infrastructure that had been deemed unsafe to keep examination material becomes safe to house students and teachers as their 'second homes'. It would not be an overstatement to argue that children's right to education only becomes a super-right when the learning and teaching environment is safe and secure. This is further supported by EPA (2014) which argues that EJ is achieved when everyone including school children and teachers have a healthy outdoor and indoor environment in which to learn and work.

Figure 2. Farm structure turned into classrooms and teacher houses

Source: Survey data

5. Conclusions

The FTLRP in Zimbabwe is applauded for having achieved social justice and some components of EJ by allowing the rural poor access to natural resources and other resources that define a healthy and quality

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life. However, findings from this study shows that achievement of EJ in A1 schemes of Chiredzi district was piecemeal as households continued to face some environmental burdens post-resettlement. Resettlement of crop farmers in an arid district, lack of comprehensive post-settlement and technical support are the three factors that affected achievement of comprehensive EJ. The arid nature of districts in agro-ecological region 4 and 5 affect access to some natural resources, diversity of ecosystem services and subsequently rural people's livelihoods and acquisition of other life enhancing resources since their livelihood systems are dependent on the exploitation of natural resources. In addition, lack of implementation of the planned social services policy had not only affected access to social and economic rights but also EJ because it also hinged on access to physical resources. The study recommended for the provision of water infrastructure in dry districts to ensure that land is productively utilized by rural households to enable them to acquire and improve social resources for a healthy and secure living. Government should revitalise a post-settlement and technical support programme to ensure that accessed natural resources like arable land, water and grazing land are sustainably utilised in order to avoid 'recreating' new environmental injustices and also improve accessibility, availability and quality of some social services households cannot provide for themselves if comprehensive EJ is to be achieved.

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