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Institutional innovation and pro-poor agricultural growth: cannabis cultivation in the Eastern Cape province of South Africa as fertile opportunity.

Gerwel H[1],

[1]Stellenboch University

Corresponding author email: hgerwel@sun.ac.za

Abstract:

South Africa has a high share of its poor population living in rural areas of the country, and especially the former homelands of Transkei and Ciskei, now part of the Eastern Cape. The challenge of mitigating and eventually ending the economic and social marginalisation of the rural poor in South Africa is clear. Agriculture plays a key role here. The sector is labour intensive with a potential for unskilled and semi-skilled job creation. It also has strong linkages to non-farm, rural economic activity. South Africa also has a highly unequal and dualistic economy with a history of support to traditional crops and markets in agriculture. It must innovatively seek to promote certain 'emerging' industries that could be managed within a more inclusive and equitable manner. Hayami and Ruttan's Theory of induced innovation interprets technical as well as institutional change as endogenous to the prevailing economic system (Hayami and Ruttan, 1971, 1984, 1985; Ruttan, 1984). With the global cannabis market opening up, and South Africa's land locked neighbour Lesotho already having granted a number of licenses for the cultivation and exporting of medical cannabis. The lack of poverty focused social scientific research on the potential of cannabis cultivation to promote inclusive growth compared to the wealth of natural science research on the impacts of cannabis highlights a gap in the literature that should be exploited towards the goals of creating conditions of improved social justice and economic emancipation.

JEL Codes: O13; O43; Q17

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1. Introduction:

In many parts of the developing world, poverty and rurality have become synonymous. South Africa is no exception, with a high share of South Africa's poor population living in rural areas of the country, and especially the former homelands of Transkei and Ciskei, now part of the Eastern Cape. Rural poverty and underdevelopment is a significant problem in the Eastern Cape Province. In a persuasive argument concerning the (even? still) current state of rural development in South Africa, Makgetla (2010) pointed out that the rural areas of South Africa are characterised by high levels of poverty and joblessness combined with very limited employment in commercial agriculture. The challenge of mitigating and eventually ending the economic and social marginalisation of the rural poor in South Africa is clear. Agriculture plays a key role here. The sector is labour intensive with a potential for unskilled and semi-skilled job creation. It also has strong linkages to non-farm, rural economic activity. South Africa as a middle income country, has a highly unequal and dualistic economy with a history of support to traditional crops and markets in agriculture.

Policy makers may be missing an opportunity for radically transforming this important sector. The National Development Plan 2030 (NDP 2030) (NPC, 2011) includes a chapter dedicated to the creation of "an integrated inclusive rural economy". The chapter suggests that, under certain conditions, close to a million jobs can be created by 2030 in the agriculture value chain when concentrating on the potential of (under a focus on) horticultural productivity growth and concomitant investment in irrigation schemes. These conditions have not been met. Along with the current drought being experienced in the Western Cape Province that is the worst in recorded history (ref?), agriculture in SA must innovatively seek to promote certain 'emerging' industries that could be managed within a more inclusive and equitable manner than has generally been the case in most large industries in South African agriculture since the advent of universal democratic rights in 1994.

The first 'Key Point' of the abovementioned Chapter Six of the NDP 2030 is articulated as acknowledgment that "[r]ural communities require greater social, economic and political opportunities to overcome poverty". The problems of unemployment, lack of opportunities and distance from formal markets remain the institutionalised constraints facing the rural population of South Africa to this day. Hayami and Ruttan's Theory of induced innovation interprets technical as well as institutional change as endogenous to the prevailing economic system (Hayami and Ruttan, 1971, 1984, 1985; Ruttan, 1984). The induced innovation theory has been refined since its first initial use to compare the route of technical change between the United States and Japan based on relative resource endowments to a recursive model that sees both institutional and technical change as

endogenous and dialectically related. South African policy makers could be well informed taking an integrated approach such as that of Hayami and Ruttan, as the entrenched structural inequities and inherent social equalities should be approached with a critical perspective if the laudable goals of the NDP 2030 are to be aspired to.

The Alfred Nzo, Oliver Tambo and Chris Hani Municipal Districts, which encompass most of the former Transkei 'homeland' or 'bantustan[1]' are of the poorest, most under resourced regions of the South African Republic; carrying the burden of unemployment, dependence of social assistance, elderly or child-headed households, and other 'factors of deprivation'. They do however have the technical skills and hence, resource endowments to exploit an emerging international market without requiring expenditure on skills-development, technical 'experts' and the usual bulk of development project budgets. With the global cannabis market opening up, and South Africa's land locked neighbour Lesotho already having granted a number of licenses for the cultivation and exporting of medical cannabis to countries in the global north is taking a lead in Africa. With the aims of the National Development Plan for agriculture in place, is the South African institutional framework, being understood in this case in a similar way as Lio and Liu (2008: 504), seeing institutional and policy frameworks "affecting economic performance" as the governance infrastructure in any country. These authors claim that the heterogeneity of agricultural performances in terms of productivity are attributable to differences in political, institutional and importantly, legal infrastructures of environments; in other words, unique contexts experienced on all of these spheres, and also taking cognisance of other factors as they are identified. This speaks directly to the recursive nature of the induced innovation theory. The following section will discuss how, within the analytical framework of Hayami and Ruttan's induced innovation theory, the South African case requires a stronger focus on institutional change rather than that of giving primacy to the technical change component of induced innovation. Section three describes the cannabis institutional framework in South Africa. Section Four Concludes.

2. Induced institutional innovation in South African agriculture:

[1] Transkei became the first homeland to be granted the status of 'self-governing territory within the Republic of South Africa', with the Ciskei following suit in 1972, as part of the nefarious 'grand apartheid' plan of racial segregation (Hamman and Tuinder, 2012).

Improving agricultural productivity is an academically accepted premise in developing countries as a prerequisite to economic development through the lowering of real food prices and but more importantly to certain authors, "…indirectly keep wage costs low in the industrial sector, thereby fostering investment and economic transformation" (Lio and Liu, 2008: 504). However, there seems to be consensus among most analyses, irrespective of ideological or political motivation, that improving agricultural productivity is a positive event for the broader rural environment? and through predominant linkage effects, the national economy as well.

For the purposes of this study, pro-poor growth will be broadly understood to mean inclusive economic growth that enables the poor to actively participate in and benefit significantly from improved economic activity, or growth with the maximum pay-off in terms of poverty reduction (Kakwani & Pernia, 2000; Christiaensen et al, 2010). This paper is concerned more with the conceptual issues surrounding the term and not in measuring it, as it is assumed that growth in South Africa's case has not been predominantly pro-poor as would be expected since 1994, as evidenced with an overall poverty increase in the country since the last poverty evaluation (Stats SA, 2017). It appears that in South Africa, the assertions of Kakwani and Pernia (2000: 4) referring to policies which tend to constrain pro-poor growth, including "… big city-oriented industrial location policies and public infrastructure spending biased towards urban areas and against rural areas", were also prevalent in South African policy making, strongly influenced through established and entrenched social relations predicated on a dominant and racially skewed economic hierarchy in the South African political economy. Institutional innovation and its re-direction within a constrained institutional environment and "governance infrastructure" (Lio and Liu, 2008: 504) as is the case in South Africa, is desperately needed.

The interpretation of technical and institutional change as endogenous to the economic systems is an important advancement in understanding how agricultural production systems operate and how productivity changes are induced. The endogeneity of technical change shown by inter alia, Hayami and Ruttan (1971, 1985); Binswanger and Ruttan (1978); Wade (1981), does not necessarily imply that the progress of agricultural technology can be left to the ubiquitous invisible hand that inexorably drives it teleologically along some efficient path determined by relative resource endowments alone. As Hayami and Ruttan (1984, cited in Otsuka and Runge, 2011: 224) assert, "[t]he capacity to advance knowledge in science and technology is itself a result of a product of institutional innovation…" In a 1971 discussion paper for the Centre for Economic Research at the University of Minnesota's Department of Economics, Yujiro Hayami and Vernon Ruttan started outlining their theory around *Induced Innovation in Agricultural Development*. Herein they bemoaned the fundamentalism with which industrialisation was touted as the only way for developing countries to climb the ladder of modernisation and economic development. This has

remained the dominant framework within which development thinking was couched until the release of the World Development Report of 2008 (World Bank, 2007). One of the primary objectives of the induced innovation theory was "…to develop a single model of agricultural development that would be able to incorporate *historical agricultural development experience* in both the presently developed and less countries" (Hayami & Ruttan, 1997, cited in Otsuka and Runge, 2011: 12, emphasis added). They go further by acknowledging that agricultural development through technical change occurs within a complex pattern of institutional changes so as to create a socioeconomic environment that enhances the abilities of individuals, private firms and public entities to respond effectively to these new technical opportunities.

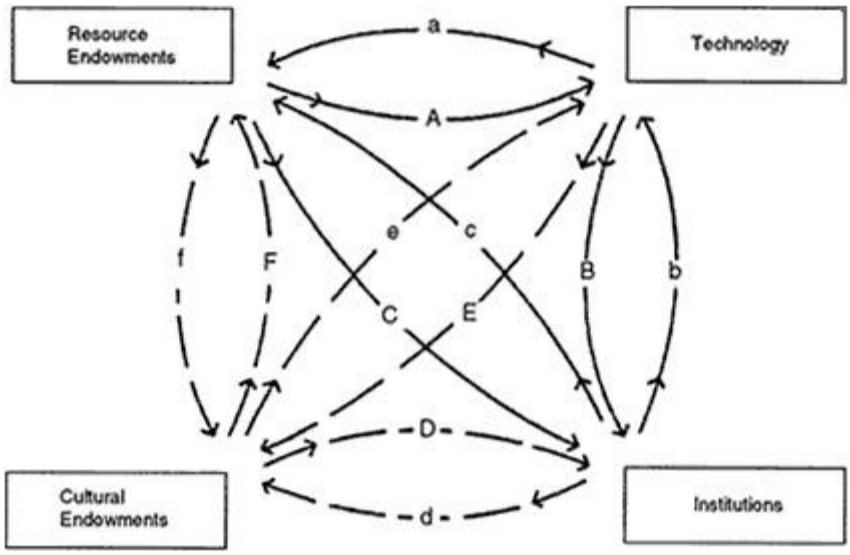
2.1 Induced Innovation:- the Recursive Model:

To begin the discussion on institutional innovation it would be prudent to first present definitions of what the constituent components of the abovementioned pattern model should be. Firstly, a definition of institutions is discussed, followed by a short description of cultural endowments. Resource endowments and technology retain their respective economic definitions and need no further description. Giddens (1984: 17-18) defines a social system as simply being a pattern of social relations that exists over a period of time, which is understood to be reproduced practices. Seeing institutions as a manifestation of 'sedimented' and embedded social practices or relations in time space respectively, he defines institutions as "… social practices which have the greatest time-space expansion". This essentially means that these practices or patterns of social behaviour show some continuity over time and within a particular societal context. Le Roux (1984: 7) alludes to the importance of reflexively taking cognisance of the duality of structure and the fact that it is ordinary individuals that create structures. He sees this as referring to the fact that the structured properties of social systems (such as institutions) are both the medium and outcome of social action (Gerwel, 2010: 26). However, the unbalanced power relations between the agents, or social actors and the established institutions imbued economic and political capital should again, reassert the need for institutional innovation in the South African context.

Invoking Hayami and Ruttan on the matter again, "[i]nstitutions are the rules of a society or of organizations that facilitate coordination among people by helping them form expectations which each person can reasonably hold in dealing with others". These institutions reflect the conventions and socially accepted behaviours that have evolved in different societies regarding the reactions or agencies of individuals and groups relative to their own behaviour and the behaviour of others (Otusuka & Runge, 2011: 224). Although institutional stability is paramount to ensure the formation

of reasonable expectations, like technology, institutions must also change with time to facilitate the development process. In other words, as human action (institutional innovation) can be constrained or enabled by structural properties, in the same light, reforms of these structural properties (existing institutions) can both be constrained and enabled by the individual agency of influential human actors (See Gerwel, 2010; Le Roux, 1984, Giddens, 1979; 1984).

Hayami and Ruttan's innovative concept of cultural endowments include religion and ideology, both which could act as either enablers or constraints on social action towards changing the structural properties of existing institutions. Usually seen as given tastes within more formal microeconomic models, the induced innovation hypothesis interrogates how these so-called cultural endowments make certain forms of innovation less costly to establish, and impose more costs on others (Otsuka & Runge, 2011: 236). Importantly for this study, advances in social science that improve knowledge relevant to the design of institutional innovations that are capable of generating new income streams or that reduce the cost of conflict resolution, and the supply of public goods such as non-excludable socialised research, act to increase the level of institutional change (Otsuka & Runge, 2011: 237).



Source: Ruttan and Hayami (1984)

Figure 1: The Hayami-Ruttan 'Recursive' Model of Induced Innovation

Hayami and Ruttan's earlier work (1971) demonstrated that the path of technical change followed in both the United States and Japan had been induced by relative resource endowments that were interpreted through changes or differences in relative factor prices between the two countries. What also became illuminated was the ability to generate a continuous sequence of induced innovations in

the agricultural technology biased toward saving the limiting factors in both countries. In the US, these technical innovations were mainly mechanical, while the Japanese innovations were primarily biological and chemical. This trend was driven by a decline in prices of land and machinery relative to wages in the US, whilst the Japanese supply of land was inelastic, causing land prices to rise relative to wages. The results of their study indicated that the large scale changes in factor proportions in the two countries are mainly explainable through changes in factor-price ratios. Resource endowments, or factor-supply conditions, were the bases for the contrasting patterns of factor-price movements. Rapid agricultural growth in both countries over the investigated period could not have been sustained, or even achieved, without dynamic factor substitution. Drawing directly on their conclusions:

> If factor substitution had been limited to substitution along a fixed production surface, agricultural growth would have been severely limited by the factor of inelastic supply. Development of a continuous stream of new technology which altered the production surface to conform to long-term trends in factor-prices was the key to success in agricultural growth in the United States and Japan (Otsuka & Runge, 2011: 200)

Again, it is acknowledged that one of the most important contribution of the expanded induced innovation theory to economic analysis of agricultural transformation is treating both technical and institutional innovation as endogenous so that "…new insights on institutional innovation and diffusion can be obtained by treating institutional change as an economic response to changes in resource endowments and technical change" (Otsuka & Runge, 2011: 240). This paper highlights the importance of the institutional change required to bring about the enabling, as opposed to constraining, characteristics of the structural properties of social institutions (Giddens, 1984). According to Hayami and Ruttan, 1999), two of the important advantages of the recursive "pattern model" is that it assists in identifying areas of ignorance and secondly, the model is useful in identifying the components of other models that look to account for secular economic and social change. The failure to analyse historical change in general equilibrium contexts have generally tended unidimensional perspectives on the complex relationships impacting on technical and institutional changes in developing societies, that have a stronger focus on the former. This is apparent in the foci of research on the topic in South Africa (Thirtle et al, 1993, Conradie et al, 2008a,b; Liebenberg, 2012; Gerwel and Conradie, 2016).

This paper thus highlights the underlying importance of the 'institutional innovation' side of the recursive model outlined above. There is a paucity of research on the interactions between cultural endowments and institutional change within development economics. The aim here is to examine the institutional environment, in terms of "rule of law" and "control of corruption", (Lio and Liu,

2008: 504) as it ties in with the concept of "governance structures" are basic factors that explain lacklustre economic performance of many developing countries.

2.2 Institutions within Governance:

The importance of good governance in promoting economic development and inclusive growth is a well-recognised pre-condition (Williamson, 1994; Rivera-Batiz, 2002; Pike and Tomaney, 2009; Levy, 2014). According to Lio and Liu (2008: 505), governance can be interpreted as "the traditions and institutions by which authority in a country is exercised". This definition displays the primacy of the institutional environment in their analysis; this will be the focus of this section. As is the case with the analysis of Kaufman et al (2005), Lio and Liu (2008: 505) divide the concept of governance into three aspects, "respect for the institutional framework", "quality of government action" and "selection of authority". The first aspect, respect for the institutional framework can be further divided into two dimensions, the rule of law and the control of corruption, as mentioned above. The importance of the rule of law is highlighted by Lio and Liu as an indicator of the level of trust or social capital that economic agents display by having confidence in and abiding by the legal rules of society. Their analysis is firmly situated within the body of literature that promotes agricultural productivity growth and decreasing the transaction costs of implementing technical change in developing countries towards modernising agriculture and fostering structural transformation (Thirtle and Sartorius von Bach, 1993; Thirtle et al, 2005; Thirtle and Piese, 2007; Schneider and Gugerty, 2011).

The second dimension in the institutional framework is control of corruption; it is conventionally defined as "…the exercise of public power for private gain" (Lio and Liu, 2008: 505). Corruption or state capture, as it is popularly referred to in the current South African context, is an important concept to interrogate as the state or government is deemed an indispensable part of modern market economies, as it can be seen as a rational device for reducing transaction costs when economic interactions have become too complex to be handled within personalised networks" or within informal institutions (ibid: 506). With unbalanced and unequally distributed coercive power prevalent in most modern market economies, failure to control corruption markedly corrodes the governance infrastructure so crucial to effective and inclusive agricultural development.

The following section will discuss the potential of creating a favourable institutional environment for capturing the opportunities in the global cannabis cultivation market to promote inclusive, pro-poor rural outcomes in the Eastern Cape Province of South Africa. The paper asserts that under the appropriate institutional conditions, this emerging market could lead to improved outcomes in terms of poverty reduction in this impoverished region of the Republic of South Africa.

3. Cannabis cultivation in the global context:

Although the cultivation, use and distribution of cannabis remains prohibited in most countries, the legal framework on cannabis is changing and governments are showing more tolerance. Recently, four states in the USA—Alaska, Colorado, Oregon and Washington—legalised cannabis for personal use, followed by California legalising recreational use as of 1 January 2018. Canada is also well on its way to legalising the plant. A licensed retail and production system for cannabis was introduced in Uruguay in 2014. There are several alternatives to prohibition varying from decriminalization to regulation and legalization. Whereas decriminalization refers to the removal of the criminal status for personal possession or use, regulation refers to limits on access and restrictions on advertising. Legalisation refers to cannabis use and cannabis supply, making lawful what previously was prohibited (Palali and van Ours, 2017).

The abovementioned regions attest to the economic benefits of the institutional innovations in cannabis legislation, with increased tax revenues from cannabis sales, as well as evidence of reduced cannabis use among young people. Gettman and Kennedy (2014: 1) evaluated regulatory frameworks for the legalized production, sale, and use of marijuana. They argued that "…the primary goal of legalization should be the elimination of the illicit trade in marijuana and that maximizing market participation through open markets and personal cultivation…" being the best approach to achieving this goal. According to Subbaraman and Kerr (2017), ongoing support for the legalization of recreational marijuana continues to increase across the United States and globally. Their study shows that public opinion shows support for marijuana legalization that has continued to significantly increase in Washington, a state that has experienced the policy change for almost four years. The debate around legalisation of cannabis is firmly positioned within the context of harm reduction and potential social impacts. The gap this paper aims to address is looking at the poverty reduction potential of opening up the international market. What remains to be seen is whether 'elite capture' can be mitigated to make cannabis cultivation an inclusive, pro-poor industry in South Africa.

Lesotho has taken the role of vanguard in using the changing global institutional framework in cannabis markets, granting licenses to a number of commercial growers to export medical cannabis to the United States. Surely this is a fertile opportunity for the South African government to revamp its current prohibitionist stance against cannabis cultivation to further the goals of poverty reduction and inclusive growth of the rural economy as articulated in the NDP 2030? The current 'rule of law' concerning cannabis cultivation in South Africa warrants some discussion next.

3.1 Cannabis prohibition in South Africa:

Cannabis in South Africa is illegal for recreational or medical use. Certain advocates have placed increased pressure on the national government to modify its laws, which first restricted cannabis in 1922, so as to allow exemptions for medical use, religious practices, and other purposes. In 1922, regulations were issued under an amended *Customs and Excises Duty Act* which criminalised the possession and use of "habit forming drugs", including cannabis. Under regulation 14, the cultivation, possession, sale, and use of the plant were prohibited. The burden of proof for any defence against a charge lay with the accused; legal scholar Professor Chanock contrasted this with laws regulating alcohol at the time, which laws placed the burden of proof on the accuser; he reasoned that the cannabis regulations were applied differently because they were intended to target black people (Chanock, 2001). Under the *Drugs and Drug Trafficking Act* of 1992, people found in possession of more than 115 grams of cannabis were presumed to be guilty of dealing. However, following the adoption of the interim constitution of South Africa, courts found that this unjustifiably infringed the constitutionally enshrined presumption of innocence, and consequently invalidated those parts of the Act. In 1937, the government of South Africa introduced the *Weeds Act*, which made the occupant or owner of a property accountable for preventing the growth of cannabis, or any other plant classified as a "weed", on the property. Patterson (2009), through an examination of the influence which the colonial paradigm based on Social Darwinian thinking had on the understanding of the cannabis plant in southern Africa, argued that cannabis prohibition and apartheid laws rested on the same ideological foundation. The maintaining of the racially biased cannabis legislation after universal democratic suffrage was attained in 1994 remains an enigma. However, on 31 March 2017, in a case brought by Gareth Prince, Jeremy Acton, and Jonathan Ruben before the Western Cape High Court, presiding Judge Dennis Davis ruled that any law disallowing the use and cultivation of cannabis by an adult in a private dwelling was unconstitutional and therefore invalid, on the grounds that such infringement of the constitutional right to privacy could not be justified. The judgements mentioned here are both based on constitutional principles, and does not acknowledge the poverty reducing potential of cannabis cultivation for the marginalised rural communities currently cultivating the crop as a livelihood strategy under extremely risk prone and precarious conditions.

3.2 Opportunities for the Eastern Cape's cannabis cultivation:

To begin a discussion of communal farming in the Eastern Cape, one should firstly describe the former Transkei, which was a Xhosa “homeland” established to further the apartheid ideals of separate development, and also create a surplus labour pool from which the mining industry could draw cheap labour. One of the Apartheid government’s acts of segregation was the Bantu Authorities Act of 1951, which legalized the deportation of Blacks into designated “Bantustans”. In the area of the Eastern Cape, two such homelands were created: the Transkei (in 1951) and the Ciskei (in 1961). Then in 1963 the Transkei became the first homeland to be granted the status of 'self-governing territory within the Republic of South Africa’, with the Ciskei following suit in 1972 (Hamman and Tuinder, 2012).

The Transkei was divided into three physically separate regions and took up approximately 44 000 square kilometres. The largest main segment was bordered by the Umtamvuna River in the north and the Great Kei River in the south, with the Indian Ocean and the Drakensberg mountain range, including parts of the landlocked kingdom of Lesotho, serving as the eastern and western frontiers respectively. A further two small segments occurred as landlocked isolates within South Africa. One of these was in the north-west, along the Orange River adjoining south-western Lesotho, and the other in the uMzimkhulu area to the east, currently part of Kwazulu-Natal. Each reflected colonially designated tribal areas where Xhosa speaking peoples predominated. A large portion of the area was mountainous and not suitable for agriculture. “Independence” from the Republic of South Africa was granted in 1976 (http://www.sahistory.org.za/places/transkei).

Cannabis grows well in South Africa's climate, especially in the so-called "dagga belt" (cannabis belt), an area including the former Transkei region Eastern Cape where, per the 2011 *International Narcotics Control Strategy Report*, it is a traditional crop. According to a report in *GroundUp* online magazine, cannabis is "an important cash crop" that "sustains entire communities in the rural Eastern Cape", which otherwise survive in a subsistence economy characterised by communal farming systems. The traditional nature of cannabis cultivation speaks to the inhabitants of this region already having the cultural endowments and technical expertise to make cannabis cultivation a successful export crop, if the institutional framework is incorporated so as to enable, and not constrain the agency of the cultivators by providing access to inputs, infrastructure and markets.

The South African government, learning from the example of Lesotho, has a golden opportunity to promote cannabis cultivation in the Eastern Cape by potentially following the current focus on Industrial Development Zones (IDZs), by designating the cannabis cultivating parts of the province as Special Agricultural Zones (SAZs). This could be a gradualist approach to cannabis legislation, as it can serve as a pilot for outright legalisation of medical and recreational use. This would free up the under-resourced South African Police Service, who are currently continuing with the cannabis eradication programs implemented since the 1950s. Police initially uprooted dagga plantations and

burned the crops but in 1980 switched to using herbicides, which they would dispense with hand-held pumps. By the end of the 1980s, helicopters replaced ground patrols, and helicopter patrols would release herbicides aerially to destroy entire crops in minutes. The SAPS now uses an herbicide formulation which includes highly toxic glyphosate, and maintains that it is safe, posing "no threat to human, animal, or environmental health". However, a new coalition of the non-profit organisations *Fields of Green For All*, *Transkei Animal Welfare Initiative*, and the *Amapondo Children's Project* launched legal proceedings in 2016 to stop the SAPS from performing aerial eradications (de Greef, 2016).

The inexplicable lack of willingness of the South African government to repeal the racist laws of cannabis cultivation is a gross violation of the constitutionally enshrined right to dignity of rural communal farmers that also infringes on the cultural traditions of the indigenous population. What is also worrying, in the context of Lio and Liu's (2008) analysis of institutional frameworks, is the fact that 'elite capture' of the cannabis market is not only likely, but already occurring. Even though the Medicines Control Council (MCC) of South Africa claims it has not granted any licenses for legal cannabis cultivation up to this point, a large scale growth facility associated with international investment company LGC Capital, and its joint venture global logistics solutions company *AfriAg*, signed an agreement to acquire a 60% interest in South African cannabis product manufacturing company House of Hemp. The departments of Agriculture and Health awarded House of Hemp its exclusive permit in 2010 to legally cultivate and process hemp and cannabis products and its licence includes importing cannabis seeds and products (Mavuso, 2017). Could this be interpreted as a lack of Lio and Liu's (2008) 'control of corruption'? Only time will tell. If this is indeed the case, it does not bode well for fostering the pro-poor growth potential of cannabis cultivation for the marginalised population of the deep rural areas of the Eastern Cape Province of South Africa.

4. Conclusion and recommendations:

South Africa's NDP 2030 makes an argument for a focus on irrigated horticulture to promote the establishment of an inclusive rural economy. With the current drought experienced in the country, this seems rather unlikely. Cannabis cultivation, which is already a livelihood strategy of the marginalised communities of the Eastern Cape Province, is a fertile opportunity for contributing to the NDP 2030's goals of creating 1 million agriculturally based jobs by 2030. With the creation of an enabling institutional environment through setting up Special Agricultural Zones within which cannabis cultivation is unencumbered by the SAPS, the emerging international cannabis market could be an avenue through which positive rural outcomes through inclusive growth and increased tax revenues can be supported. The government requires a paradigm shift in its approach to using the cultural endowments available to the rural communities of the Eastern Cape, together with the long established technical capabilities at their disposal. What is thus required is more evidence based policy making based on the potential socio-economic impacts of approaching this opportunity in an assets-based, rather than needs based manner. The Sustainable Livelihoods Approach, which does this, is an appropriate analytical framework through which further investigations into the potential of cannabis cultivation as a pro-poor growth promoting activity, can be evaluated.

The majority of research on induced innovation focus on the technical change component of the recursive model discussed above. Seeing the institutional and technical innovations as well as cultural endowments as equally important endogenous processes in economic development is an important extension of general equilibrium analysis (Hayami and Ruttan, 1984). Hayami and Ruttan further see the importance of social science knowledge in the supply of institutional change, similar to how scientific research supply mechanisms for technical change. The lack of poverty focused social scientific research on the potential of cannabis cultivation to promote inclusive growth compared to the wealth of natural science research on the impacts of cannabis highlights a gap in the literature that should be exploited towards the goals of creating conditions of improved social justice and economic emancipation for people in developing societies of the global South.

References:

"Transkei." The Columbia Encyclopedia, 6th ed. . Retrieved August 20, 2017 from Encyclopedia.com: http://www.encyclopedia.com/reference/encyclopedias-almanacs-transcripts-and-maps/transkei

"The globalisation of cannabis cultivation: A growing challenge" [Editorial] *International Journal of Drug Policy*, Vol. 26: 221-225.

Braakman, N. and Jones, S. (2014) "Cannabis depenalisation, drug consumption and crime- Evidence from the 2004 cannabis declassification in the UK". *Social Science & Medicine,* Vol. 115: 29-37.

Chanock, M. (2001). *The Making of South African Legal Culture 1902-1936: Fear, Favour and Prejudice.* Cambridge University Press: London.

Conradie, B. Piese, J. & Thirtle, C. (2009a) 'District-level total factor productivity in agriculture: Western Cape Province, South Africa, 1952-2002'. *Agricultural Economics.* 40(2009): 265-280.

Conradie, B. Piese, J. & Thirtle, C. (2009b) 'What is the appropriate level of aggregation for productivity indices? Comparing district, regional and national measures'. *Agrekon*. Vol. 48(1): 9-20.

de Greef, K. (2016-04-20). "Battle to stop dagga spraying". *GroundUp.* [Accessed:*2017-05-05*.]

Des Crowley, D., Claire Collins, C., Ide Delargy, I.,, Eamon Laird, E. and Marie Claire Van Hout, M. (2017). "Irish general practitioner attitudes toward decriminalisation and medical use of cannabis: results from a national survey". *Harm Reduction Journal*, Vol. 14(4): 1-8.

Gerwel, G. & Le Roux, P. (1984) *Combating Poverty: Democratic Choice in the Economic Sphere*. Carnegie Conference Paper No. 132. UWC.

Gerwel, H. (2010) *The effects of labour policies in Piedmont, Italy on gender equity: reflections on women in labour.* Lambert Academic Publishers: Saarbrucken.

Giddens, A. (1979) *Central Problems in Social Theory: Action, structure and contradiction in social analysis*. London: MacMillan.

Giddens, A. (1984), *'The Constitution of Society'* University of California *Press*: Los Angeles.

Hakkarainen, P., Frank, V., Barratt, M., Dahl, H., Decorte, T., Karoliina Karjalainen, K., Lenton, S., Potter, G. and Werse, B. (2015) "Growing medicine: Small-scale cannabis cultivation for medical purposes in six different countries". *International Journal of Drug Policy*, Vol. 26: 250-256.

Hamman M. & Tuinder V. (*2012*) *Introducing the Eastern Cape: A Quick Guide to its History, Diversity and Future Challenges*. Stockholm Resilience Centre, Stockholm, Sweden.

Hayami, Y. & Rutan, V. (1971) *Induced Innovation in Agricultural Development*. Discussion Paper No.3. Centre for Economic Research, University of Minnesota: Minneapolis.

Hayami, Y. & Rutan, V. (1984) 'Toward a Theory of Induced Institutional Innovation'. *Journal of Development Studies 20 (July 1984)*: 203-223.

Hickenlooper, J. (2014) "Experimenting with Pot: The State of Colorado's Legalization of Marijuana". https://www.groundup.org.za/article/battle-stop-dagga-spraying/

Hughes, B., Wiessing, L. Des Jarlais, D. and Griffiths, P. (2017) "Could cannabis liberalisation lead to wider changes in drug policies and outcomes?" *International Journal of Drug Policy (2017)*, [In Press].

Kakwani, N. & Pernia, E. (2000) 'What is pro-poor growth?' *Asian Development Review*, 18(1): Asia Development Bank.

Kakwani, N. & Son, H. (2003) Pro-poor Growth: Concepts and Measurements with Country Case Studies. *The Pakistan Development Review*. 42(1): 417-444.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2005) "Governance matters IV: governance indicators for 1996–2004". *Working Paper, World Bank*. [Accessed: 13/01/2018] http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/GovMattersIV_main.pdf>.

Le Roux, P. (1984) "The Theory of Structuration and Racial Domination in the South African Context". Paper no. 11. Proceedings of the *Conference on Economic Development and Racial Domination*. UWC. Bellville.

Levy, B. (2014) *Working with the Grain: Integrating Governance and Growth in Development Strategies.* Oxford University Press: New York.

Lio, M. and Lio, M. (2008) "Governance and agricultural productivity: A cross-national analysis" *Food Policy*, Vol. 3: 504-512.

Makgetla, N. (2010) *Synthesis Paper: South Africa*. DBSA: Pretoria.

Mansson, J. (2014) "A dawning demand for a new cannabis policy: A study of Swedish online drug discussions". *International Journal of Drug Policy*, Vol. 25: 637-681.

Mavuso, S. (2017) "Acquisition to enable large-scale cannabis production" Creamer Media's Engineering News [Accessed: 2018-01-05] http://m.engineeringnews.co.za/article/acquisition-to-enable-large-scale-cannabis-production-2017-09-29/rep_id:4433

NPC (2011) *National Development Plan 2030: Our Future-make it work,* Department of the Presidency: Pretoria, South Africa.

Otsuka, K. and Runge, C. (eds.) (2011) *Can Economic Growth be Sustained: The Collected Papers of Vernon W. Ruttan and Yujiro Hayami*. Oxford University Press: New York.

Palali, A. and Van Ours, J. (2017) “Cannabis use and support for cannabis legalization”. Empirical Economics 53 (2017):1747–1770.

Paterson, C. (2009) “Prohibition & Resistance: A Socio-Political Exploration of the Changing Dynamics of the Southern African Cannabis Trade, c. 1850 – the present”. Masters thesis, Department of History, Rhodes University: Grahamstown.

Pike, A. and Tomaney, J. (2009) “The state and uneven development: the governance of economic development in England in the post-devolution UK”. *Cambridge Journal of Regions, Economy and Society,* Vol. 2: 13–34.

Rivera-Batiz, F. (2002) “Democracy, Governance and Economic Growth: Theory and Evidence”. *Review of Development Economics*, Vol. 6(2): 225-247.

Ruttan, V. (1984) ‘Social Science Knowledge and Institutional Change’, American Journal of Agricultural Economics, Vol. 66(5): 549-559, Proceedings Issue (Dec., 1984).

Ruttan, V. and Hayami, Y. (1995) “Induced Innovation Theory and International Agricultural Development: A Personal Account” in Otsuka, K. and Runge, C. (eds) *Can Economic Growth Be Sustained? The Collected Papers of Vernon W. Ruttan and Yujiro Hayami* (2011), Oxford University Press: New York.

Schneider K. & Gugerty M. K. (2011) Agricultural Productivity and Poverty Reduction: Linkages and Pathways. *The Evans School Review.* Vol. 1(1).

Shanahan, M. and Ritter, A. (2014) “Cost Benefit Analysis of Two Policy Options for Cannabis: Status Quo and Legalisation”. PLoS ONE 9(4): e95569. doi:10.1371/journal.pone.0095569

Shanahan, M., Gerard, K. and Ritter, A. (2014) “Preferences for policy options for cannabis in an Australian general population: A discrete choice experiment”. *International Journal of Drug Policy*, Vol. 25: 682-690.

Single, E., Christie, P. and Ali, R. (2000) “The Impact of Cannabis Decriminalisation in Australia and the United States”. *Journal of Public Health Policy*, Vol. 21(2): 157-186.

The Milbank Quarterly, Vol. 92(2): 243-249.

Thirtle C. & Piesse J. (2007) “Governance, Agricultural Productivity and Poverty Reduction in Africa, Asia and Latin America*”. Wiley Interscience Irrig and Drain*. 56:165-177.

Thirtle C., Sartorius von Bach H. & Van Zyl J. (1993) Total Factor Productivity in South African Agriculture, 1947-91. *Development Southern Africa* Vol. 10. No. 3, pp. 301-318.

Thirtle, C., Piesse, J. and Gousse, M (2005)”Agricultural technology, productivity and employment: policies for poverty reduction”. *Agrekon*, Vol. 44(1): 41-44.

Williams, J. and Bretteville-Jensen, A. (2014) “Does liberalizing cannabis laws increase cannabis use?” *Journal of Health Economics*, Vol. 36: 20–32.

Williamson, O. (1994) “The Institutions and Governance of Economic Development and Reform” *The World Bank Economic Review*, Vol. 8(1): 171–197.

World Bank (2008) *World Development Report: Agriculture for Development*. World Bank Group: Washington DC.

Gettman, J. and Kennedy, M. (2014) "Let it grow—the open market solution to marijuana control". *Harm Reduction Journal*, Vol. 11(32).

Subbaraman, M. and Kerr, W. (2017) "Support for marijuana legalization in the US state of Washington has continued to increase through 2016". *Drug and Alcohol Dependence,* Vol. 175: 205-209.