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The interplay between planned and autonomous adaptation in response to climate change: Insights from rural Ethiopia

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ABSTRACT

Using the notion of institutional interplay, which refers to situations where the operation or consequences of one regime influence another regime, the article explores the interplay between planned adaptation and farmer households' autonomous adaptation. Drawing empirical data from two drought-prone districts in Northeastern Ethiopia (Kobo and Raya Azebo), this article deals with the differentiated effects of planned adaptation, exemplified by Ethiopia's Productive Safety Net Programme (PSNP). Two layers of differentiating effects are studied by looking at the differences between households that are and households that are not targeted by PSNP; and the more detailed differences are explored by zooming in on male and female-headed households, respectively, within the subset of households targeted by PSNP. We use semi-structured interviews and focus group discussions with female and male household heads and key informant interviews with government officials. Our study indicates that the interplay has a differentiated effect following the participation of households in planned adaptation programs and gender lines. We show that the effect on building community assets can be positive at the community level and expands autonomous adaptation particularly for non-targeted households; however, targeted households in general and female-headed households in particular experience a negative effect of the interplay: planned adaptation constrains autonomous adaptation due to time and labor demands of public work, program restrictions and local gender norms.

1. Introduction

As evidence has shown, most African countries, and destitute communities in those countries in particular, are disproportionately affected by climate-induced problems. Prevalent poverty, social inequality and environmental problems such as land degradation, low adaptive capacity and, arguably most importantly, their high reliance on agriculture make them susceptible to the adverse effects of climate change (IPCC, 2014). Agriculture remains fundamental in economic, social and cultural aspects of life in African countries (Bryan, Deressa, Gbetibouo, & Ringler, 2009; IPCC, 2014). For instance, in Ethiopia, agriculture accounts for 43 percent of the gross domestic product and 90 percent of all exports. It also employs nearly 80 percent of the population, i.e. about 72 million people (FDRE, 2015). Thus, in view of the observed trends in climate change, the urgent need for adaptation in agriculture to protect the livelihoods of people is widely acknowledged (Bryan et al., 2009; Kumamoto & Mills, 2012).

This article considers vulnerability as a product of the interaction of both climate and non-climate stressors. With this understanding, adaptation responses need to focus on not only direct climate-related impacts (for instance, the provision of drought-resistant crops and irrigation) but also the underlying socioeconomic and institutional factors that influence people's vulnerability and their adaptive capacity (cf. Moser & Ekstrom, 2010; Pelling, 2011). This is particularly relevant for the case of developing countries, where social inequality, institutional, financial and technological constraints shape actors' vulnerability and adaptive capacity in relation to climate change (Kumamoto & Mills, 2012). In light of this, as stated in the Agriculture Sector Programme of Plan on Adaptation to Climate Change (ASPPACC), the Productive Safety Net Programme (PSNP), despite being originally a "safety net" program, is now also explicitly considered and treated as an adaptation intervention by the government to reduce people's vulnerability to extreme climate events such as drought and to enhance their adaptive capacity (FDRE, 2011). Adaptation to climate change has been carried out throughout society by individuals, community and governments and materializes in different types and forms (Smit et al., 2001). Farm communities and

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households have been engaged in adaptation in response to experienced or perceived changes in climate. Such responses have commonly been referred to as *autonomous* adaptation. Similarly, governments and other public bodies also engage in what is called *planned* adaptation (Füssel, 2007; Smit et al., 2001). Our premise here is that autonomous and planned adaptation regimes interplay, with the latter having a differentiating effect on the way in which local actors can and will adapt autonomously.

Planned and autonomous adaptations emerge as important subjects in the adaptation literature. On the one hand, part of the literature emphasizes the value of planned adaptation interventions and questions the extent to which society can realistically rely on autonomous adaption processes alone, especially as more intense climate change-induced problems can be expected to occur in the future (Easterling et al., 2007). Therefore, some analysts claim that autonomous adaptation is inefficient and suggest focusing on planned adaptation instead (cf. Eisenack, 2009). In planned adaptation regimes, the government is perceived as the main actor with the capacity to take a leading role by developing and implementing adaptation strategies and mainstreaming adaptation into existing policies and practices (Adger et al., 2007).

On the other hand, the need to emphasize autonomous adaptation practices has also been advocated (Bonzanigo, Bojovic, Maziotis, & Giupponi, 2015; Christoplos et al., 2009; Forsyth & Evans, 2013; Thorn, Thornton, & Helfgott, 2015). On this side of the debate, it is stated that even though vulnerable people have been engaged in adaptation autonomously, such practices are often "unnoticed, uncoordinated, and unaided by national governments, development agencies or international agencies" (Christoplos et al., 2009, p. 3); this results in further marginalization of vulnerable groups. Furthermore, Malik and Smith (2012) note that government planned adaptation that restricts autonomous adaptation can lead to a risk of conflict.

However, little attention has been paid to the *interplay* between planned and autonomous adaptation regimes (IPCC, 2012; Smith & Malik, 2012). This article seeks to partially fill this gap but also to extend the notion one step further by exploring the *socially differentiated effect* of the interplay between planned and autonomous adaptations. In this regard, despite the common framing of interplay as having a unanimous effect, i.e. that planned adaptation can either stimulate or hinder autonomous adaptation, the intention here is to explore how the effects vary across segments within communities by giving special attention to differences between households that are and households that are not targeted by PSNP and to differences between male and female-headed households within the subset of households targeted by PSNP.

Feminist scholars have asserted that state policies and interventions, often unintentionally, tend to (re)produce the gender order in society, and consequently, they reject top-down policy interventions and programs as manifestations of hegemonic masculinity (Walby, 1991). Also, adaptation policies are not free from socioeconomic and gender dynamics; unless planned adaptations are designed and implemented with consideration given to the vulnerability and adaptive ability differences, they will result in discriminatory effects that make women and other vulnerable groups more vulnerable (Ayers, 2011; Pearse, 2016; Terry, 2009). Similarly, autonomous adaptation processes are neither asocial nor apolitical. The ability of individuals and households to adapt autonomously is shaped by a number of factors, including financial, social, institutional and gender-related (Adger et al., 2009; Ayers, 2011; Mersha & Van Laerhoven, 2016). This results in variation in the number and kind of alternative adaptation measures available to different groups such as men and women, respectively. It also leads to variation in the effectiveness of any adaptation strategy that a male or female-headed household may end up choosing (Mersha & Van Laerhoven, 2016).

Therefore, the premise here is that autonomous and planned adaptation interplay, with the latter having a differentiated effect on households based on their participation in the program and based on gender (i.e. differences between male and female household heads) within the subset of participating households. The study has been guided by two research questions: *How does planned adaptation emanating from the state interplay with autonomous adaptation operating at the household level?* and *How and why are the effects differentiated?* We intend to answer these questions by looking at adaptation to drought in rural Ethiopia.

2. Research context

Ethiopia is a pertinent case for achieving the objectives laid out above because it often has been portrayed as a prime example of the consequences of the current climate crisis. Overreliance on rain-fed smallholder agriculture along with widespread poverty and land degradation increase Ethiopia's vulnerability to climate change and variability (Bryan et al., 2009; Conway & Schipper, 2011; FDRE, 2015). Identified climate change-related threats for Ethiopia include rising temperature trends, fluctuating and erratic rainfall and increased climate extremes such as flooding and drought (FDRE, 2015).

Particularly, extreme events such as drought have been acknowledged as an important climate-related threat in Ethiopia that affects millions of people's livelihoods. Their frequency, magnitude and spatial coverages have become more significant in recent decades. Future projections also expect a likely increase in climate extremes and rainfall variability (*cf.* FDRE, 2015; Viste, Korecha, & Sorteberg, 2012). Every drought incident has caused human death and displacement, combined with immense economic and livelihood costs (FDRE, 2015; Gebrehiwot & van der Veen, 2013). Specifically, every drought incident so far has caused an estimated decline in GDP of between 1 and 4%. The figure is expected to rise up to 10% (FDRE 2015). Beyond humanitarian consequences, droughts and subsequent famines have had significant political and historical implications as well. For instance, the 1972–73 drought and famine precipitated the removal of the imperial regime in 1975. The failure of the military regime to handle the 1984–85 drought and famine helped the current regime, then guerrilla fighters, to garner international attention and local support to overthrow the military regime in 1991 (Comenetz & Caviedes, 2002; Young, 2006). This historical and political context not only influences the current response to drought but also affects how the success and failure of adaptation interventions are evaluated and presented.

Regarding the adaptation responses of smallholders, especially in the highlands of Ethiopia, studies report ongoing adaptation strategies that can be classified into two groups: farm-level adaptation (irrigation, crop diversification, soil conservation, changing planting dates, planting trees) and non-farm adaptation (off-farm and non-farm diversification, temporary and permanent migration) (Bewket, 2012; Deressa, Hassan, Ringler, Alemu, & Yesuf, 2009; Gebrehiwot & van der Veen, 2013; Mersha & Van Laerhoven, 2016). Different financial, social (e.g. gender inequality), structural and institutional (e.g. access to information, credit, extension services) factors determine the adaptation choices and decisions of smallholders (Bewket, 2012; Deressa et al, 2009; Gebrehiwot & van der Veen, 2013; Mersha & Van Laerhoven, 2016). Planned adaptation and government interventions are suggested to overcome such obstacles (Bewket, 2012; Gebrehiwot & van der Veen, 2013).

So far, a number of policies and institutional arrangements in response to climate change have been put in place by the government. Table 1 presents the main policies and programs that

Table 1
Ethiopia's main adaptation policies and programs.

S. N.	Title	Issued	Description
1	National Adaptation Plan of Action (NAPA)	2007	Prepared in response to the call by the United Nations Framework Convention on Climate Change (UNFCCC). It aims to formulate priority adaptation options and identifies 11 project areas
2	Ethiopia's Programme of Adaptation to Climate Change (EPACC)	2010	Intends to identify sectoral problems and concerned federal agencies. The document identifies 20 major climate change-related problems, and calls for all sectors to issue their own adaptation programs
3	Agriculture Sector Programme of Plan on Adaptation to Climate Change (ASPPACC)	2011	Developed in response to EPACC call. [*ASPPACC identifies PSNP as an adaptation option]
4	Climate Resilient Green Economy (CRGE): Green Economy Strategy	2011	Aims to protect the country from the adverse effects of climate change and to build a green economy that will help realize its ambition of reaching middle-income country status by 2025
5	Climate Resilience Strategy for Agriculture and Forest (CRSAF)	2015	Aims to devise a resilience strategy in the agricultural (crop, livestock and forest) sector. [*CRSAF identifies PSNP as one adaptation option in the agriculture sector]

directly deal with climate change adaptation. The National Programme of Adaptation to Climate Change calls for all sectors to issue their own adaptation programs (FDRE, 2010). Consequently, the Ministry of Agriculture issued its own adaptation program called the Agriculture Sector Programme of Plan on Adaptation to Climate Change (ASPPACC) (FDRE, 2011). Claiming a "no/low-regret" approach, ASPPACC adopts already existing programs and interventions in agriculture sectors. Identified adaptation strategies include disaster and risk management programs, food security programs, social welfare programs, climate monitoring and forecasting and others. The Productive Safety Net Programme (PSNP) is one of the various food security program packages (FDRE, 2011).

This study explores PSNP as an example of a planned adaptation regime in Ethiopia. Despite the current framing of PSNP as an adaptation program, it was originally developed as a so-called "safety net" program targeting chronically food-insecure individuals (FDRE, 2014). Indeed, an extensive debate exists around PSNP within the social protection discourse (cf. Béné, Devereux, & Sabates-Wheeler, 2012; Devereux et al., 2008); however, the intention of this article is not to examine the authenticity of PSNP in social protection but rather to analyze its public work component (hereafter referred to as PSNP-PW) from an adaptation discourse perspective.

2.1. PSNP in brief: A planned adaptation option

Following the 2002–03 drought, the Ethiopian government, in collaboration with a consortium of donors,[1] made a promise to "break the cycle of emergency appeals – which saved lives but did little to protect household assets" and therefore devised a new food security strategy. PSNP became one of its main components along with other food security programs. It aims to provide transfers to the food-insecure population in chronically food-insecure *wereda*[2] in a way that prevents asset depletion at the household level and creates assets at the community level (FDRE, 2014). The transfer can be either in cash, food or both. PSNP consists of two components. *Direct support*, designed for households with insufficient labor capacity such as elderly people with disabilities and pregnant women, is one of the components. The other is *public work*, which aims to provide temporary employment for chronically food-insecure households with an "able-bodied" adult member. About 85 percent of the targeted households participate in labor-intensive activities for six months (often from January to June) in return for the transfer. Activities in the public work component of PSNP include environmental rehabilitation – such as terracing and reforestation, soil and water conservation – and infrastructure building – such as roads, schools and health centers. PSNP is now in its fourth phase (2015–2020). In this phase, the aim is to reach 10 million people (nearly 10 percent of the population) in 411 *wereda* each year (FDRE, 2014).

2.2. A glimpse at gender

In Ethiopia, despite recent improvements in securing women's rights through gender equality laws and legislation in different areas such as access to land (cf. Kumar & Quisumbing, 2015), the *de facto* gender power imbalance remains a salient feature that significantly influences the lived experiences of men and women in general and of female-headed households in particular (Kumar & Quisumbing, 2013; Torkelsson, 2007). According to Torkelsson (2007), rural women's access to resources and economic benefits relies highly on their relationship with men and their networks, as dominant social structure privileges men. Consequently, female household heads with small children and no close male figure in their extended family end up being marginalized. On a similar note, but in pastoralist communities, Enyew and Mengistu (2013) indicate that female-headed households face problems in securing their livelihood due to limited access to resources and constrained rights. Thus, this article pays special attention to the gender-based differentiation between household heads in analyzing the interplay between autonomous and planned adaptations and its effects.

3. Analyzing institutional interplay

Although institutional interplay in climate change regimes has often been dealt with at the international level, the concept can be extended to analyze interplay at the national and local levels. Institutional interplay is defined as a situation in which the development, operation, effectiveness and broad consequences of one *target* institution are affected by the rules and programs of another *source* institution (Gehring & Oberthür, 2009). As the number of institutions increases, institutional interplay can be expected to become more common and more significant. The influencing process can be unidirectional, for instance in the case of the enactment of national regulations without considering local situations. It can also be bidirectional or symmetrical in the case of two or more institutions with equivalent regimes (Young, 2002).

Young (2002) has made a distinction between *horizontal* and *vertical* interplay, based on the form of interplay, and *functional* and *political* interplay, based on the role of interplay. *Horizontal* interplay is an interaction between two or more institutions

[1] Including the United Kingdom's Department for International Development, Irish Aid, the European Union, Canadian International Development Agency, Swedish International Development Agency, the Netherlands, Danish International Development Agency, the United States Agency for International Development, UN Children's Fund, the World Food Program and the World Bank.

[2] *Wereda* (or *woreda*) is an administrative unit equivalent to district.

located at the same level of a social organization. *Vertical* interplay is an interaction between two or more institutions located at different levels of a social organization such as global adaptation and national adaptation or national adaptation and local adaptation. *Functional* interplay refers to a situation in which two regimes attempt to tackle the same issue or where their actions are linked. For instance, the actions of both farmer households and the state in response to climate change results in functional interplay. *Political* interplay refers to a situation in which actors intentionally create linkages across issues or institutions in order to achieve individual or collective goals (Young, 2002).

According to Gehring and Oberthür (2009), institutional interplay analysis needs to, *first*, identify the source institution (or its particular component, decision or rule) that exerts influence as an independent or explanatory variable; *second*, identify the target institution (or its particular component) that is being subject to influence as a dependent variable; and *third*, make explicit the causal link that is hypothesized to exist between the source and the target institution in order to explain the effects of interaction. It must furthermore be recognized in the analysis that in the influencing process, actors such as state, non-state or other interest groups play important roles (Gehring and Oberthür, 2009). In view of this, the focus of this study is primarily on functional interplay between planned adaptation by the Ethiopian government (i.e. the source institution) and autonomous adaptation by farmer households (i.e. the target institution).

As a deliberate policy intervention, planned adaptation is often carried out by the government (but also by non-government actors) in response to actual or expected changes in climate (Adger et al., 2007; Füssel, 2007; Smit et al., 2001). It can be anticipatory (i.e. adaptation interventions before the climate-induced impacts are being experienced) or reactive (i.e. adaptation interventions after climate-induced impacts have occurred); localized or generic; and focused on the short or on the long term (Füssel, 2007; Smit et al. 2001). Planned adaptations are often sectoral interventions targeting, for example, agriculture, water and infrastructure (Adger et al., 2007).

Autonomous adaptation, on the other hand, is carried out by local actors – i.e. individuals, households or communities (Smit et al., 2001). Different studies document the nature and type of autonomous adaptations carried out in different parts of the world; for instance, diversification, migration, storage of food, farm-level adjustment and systems of mutual support are mentioned (Bonzanigo et al., 2015; Thorn et al., 2015). In the Nile Basin of Ethiopia, Deressa et al. (2009) identify crop switching, late planting, soil conservation and tree planting in particular as the main forms of autonomous adaption carried out by smallholders.

We adopt Agrawal's (2010) analytical categories of adaptation activities that households engage in – *diversification, mobility, storage, market exchange and communal pooling* (Table 2). According to Agrawal's (2010), diversification consists of on-, off- and non-farm diversification; however, merging together these three activities may obscure what diversification means to men and women, respectively. In our analysis, thus, we differentiate on-farm adaptation (referring to activities related to farming) and diversification (referring to non-farm and off-farm activities), respectively.

3.1. Effects of socially differentiated interplay

When institutions interplay, there are resultant effects that can generate either positive or negative outcomes (Young, 2002). In this study context, planned and autonomous adaptation interplay may help to achieve adaptation goals by pooling resources and by readdressing constraints at local levels. But in order for positive interplay effects to occur, goals must be mutually reinforcing. If this is not the case, the resultant effects become problematic for autonomous adaptation and the farm households whose livelihoods depend on it.

One focus of this study is on the differentiated effect of the interplay. Actors whose autonomous adaptation is influenced are heterogeneous. We assume that vulnerability and the ability to adapt to climate change varies across and within communities according to differences in socioeconomic status, gender and ethnicity (Agrawal, 2010; Ayers, 2011; Perez et al., 2015). Thus, any planned adaptation intervention that operates without considering such heterogeneity cannot address the underlying vulnerability and can even end up reinforcing existing inequalities (Pearse, 2016).

Top-down state interventions have inevitable effects on different socioeconomic groups such as between influential and subordinate groups, men and women, and so forth. For instance, Walby (1991, p. 150) notes that "The state is engaged with political forces, its actions have gender-differentiated effects and its structure is highly gendered". The (re)production of social inequality, such as gender order, through state interventions, can occur directly – when biased norms and practices are reinforced – and/or indirectly – when a neutral policy intervention (unintentionally) ends up producing inequitable effects (Ayers, 2011; Pearse, 2016; Terry, 2009). Adaptation literature has also indicated that men and women, as well as male and female household heads, respectively, indeed employ different adaptation measures. Choices and options, as well as the way in which adaptation works out, are determined by different factors and barriers that are also gendered (Mersha & Van Laerhoven, 2016; Pearse, 2016). In view of this notion, the interplay between planned and autonomous adaptation is analyzed and understood by looking not only at how the interplay unfolds but also at its gender-differentiated effects.

4. Methodology

We use a single case study design based on its premise to capture a complex phenomenon in a given context (Yin, 2013). To this article, the context refers to understanding adaptation as a response to climate change-induced problems and other non-climate factors. Considering frequent drought occurrence and government intervention, purposive sampling was used to select two drought-prone *wereda* from North Eastern Ethiopia: *Raya Azebo Wereda*, located in Tigray Regional State, and *Kobo Wereda*, situated

Table 2
Types of autonomous adaptation.

Adaptation types	Description
On-farm Adaptation	Adjustment of farming activities in response to climate change, such as cropping time adjustment and mixed cropping
Diversification	Spreading risks across assets through engagement in non- and off-farm activities
Mobility	Spreading risks across space through temporary labor migration, international migration and remittances
Storage	Spreading risk across time
Market Exchange	Spreading risk through product exchange
Communal Pooling	Spreading risk across households using common resources such as forests and water or labor sharing

Source: Adopted from Agrawal (2010).

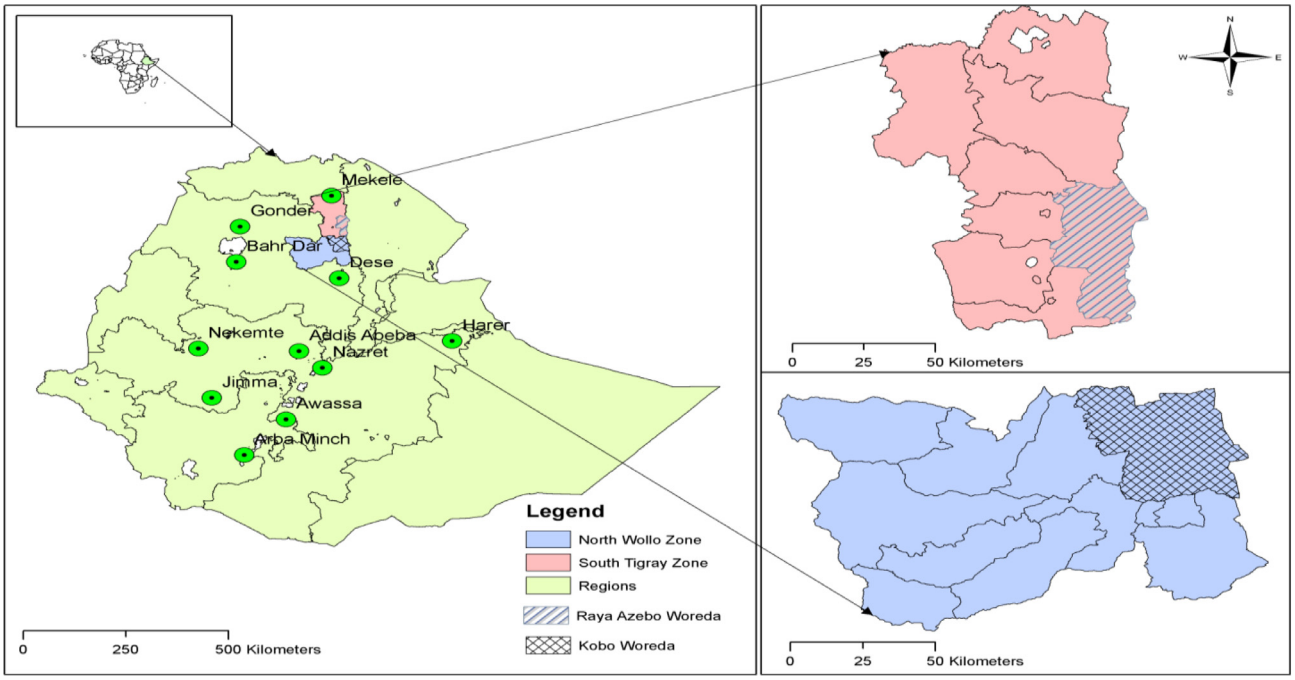

Fig. 1. Map of the study area.

in Amhara Regional State (see Figure 1). According to Etikan, Abubakar Musa, and Sunusi Alkassim (2016), purposive sampling is a nonrandom sampling where participants/cases are selected deliberately due to their relevance to the stated goal. These two districts are drought hotspots and have experienced every drought that made national and international headlines since the 1970s. They are also among the state's top prioritized areas for interventions in response to the drought of late 2015, which has affected nearly 10.2 million people nationally. From the districts mentioned above, two *kebeles*[3] were selected: *Mechare* from *Raya Azebo* and *Zoble* from *Kobo*. Fieldwork was carried out in 2014 (March and May) and in 2015 (February and March).

The study uses both primary data sources – resulting from semi-structured interviews, focus group discussions, key informant interviews and observations – and secondary data sources such as policy documents, reports and archives. With regard to the policy documents, a large part of the analysis is based on national policies and implementation guides related to PSNP.

Government officials (including federal, regional and local-level bureaucrats) and male and female household heads were direct participants in the study. We interviewed government officials at these three levels in order to capture the perspective of policymakers at the national level and implementers at regional and local levels. Hence, officials who are responsible for climate change adaptation and gender-related issues in their respective public organization were selected purposively.

Data collection from household heads were facilitated by four field assistants (two males and two females). The field assistants proved information on venue and time of particular public work activities in the area and introduced the interviewer and the objective of the interview to the respondents. PSNP-targeted household heads were selected using convenience sampling when we found them engaged in public work activities. Convenience sampling is a nonrandom sampling technique where participants are selected simply because of their availability at a given time and place (Etikan et al., 2016). Non-targeted households were initially selected with the help of field assistants, and then these respondents were asked to suggest individuals with more information about previous drought situations and environmental conditions in the study areas (i.e. snowball sampling). Interviews were recorded[4] and field notes were used throughout. With regard to data collection procedures, the first author conducted all interviews, informal discussions and observations of the activities performed by targeted households in PSNP-PW.

In total, 15 key informant interviews were held with government officials. Twenty semi-structured interviews were conducted with households targeted for the PSNP program (10 female household heads and 10 male household heads), and 10 semi-structured interviews were held with non-targeted households (2 female household heads and 8 male household heads). Table 3 provides the detailed background characteristics of respondents.

Both semi-structured and key informant interviews were carried out with the use of topic lists. Questions covered issues that dealt with perceptions of drought and its effects, adaptation measures taken and motives for adaptation, the implementation of PSNP and its effect on households' livelihoods, the local environment and the community. However, interviews were open to probe emerging issues. To increase the validity of the study, we checked for consistency of data across sources (i.e. respondents) (Yin, 2013). Focus group discussions were carried out with men and women villagers. In both study areas, two focus group discussions were held with both men and women, and two with women-only.

The analysis of data was grounded in content analysis (Charmaz, 2006). Coding and thematic grouping were used to analyze interview transcripts and field notes. Coding refers to "attaching labels to segments of data that depict what each segment is about" (Charmaz, 2006, p. 3). The focus of the content analysis was on adaptation discourses and on the attention that was given to autonomous adaptation practices and gender-based differences. After the coding, thematic grouping and systematic organization of narrations were made (Charmaz, 2006). In this sense, whereas our

[3] *Kebele* is the lowest administrative unit.

[4] With the exception of some cases where interviewees did not permit it; in those cases, notes were taken by the researcher instead.

Table 3
Characteristics of interviewed household heads (n = 30).

Characteristics	Targeted households		Non-targeted households	
	FHH	MHH	FHH	MHH
Age group				
30–44	5	2	–	3
45–59	3	3	1	3
Above 60	2	5	1	2
Marital status				
Married	–	10	–	8
Divorced	3	–	–	–
Widow	5	–	2	–
Single mother/father	2	–	–	–
Schooling				
No schooling	10	8	2	5
Primary Education	–	2	–	2
Secondary Education	–	–	–	1
Land ownership				
Yes	10	10	2	8
No	–	–	–	–
Who cultivates the land?				
Respondent	–	10	1	8
Relatives	–	–	1	–
Share croppers	10	–	–	–

research design was guided by a preconceived framework based on our understanding of the literature, interview questions were reconstructed throughout the data collection process in an attempt to probe more deeply into newly emerging themes (cf. Charmaz 2006).

5. Results

5.1. Climate change adaptation agenda

All interviewed government officials and document analysis (cf. FDRE, 2015) confirmed that climate change has posed a threat to the country; hence, adaptation is prioritized as a crucial national agenda. "*Adaptation [to climate change] is neither motivated nor imposed by the international discourses. From the actual experience we encounter, it happens to be a matter of survival,*" said an interviewed government official. However, our review of policy documents shows that the National Adaptation Plan of Action (NAPA) (see Table 1) – which was prepared in response to a call from the United Nations Framework Convention on Climate Change (UNFCCC) – is the country's first focused document that explicitly deals with adaptation to climate change. Prior to NAPA, extreme climate events such as droughts were situated in the disaster prevention and social protection discourses (Conway & Schipper, 2011; Devereux, Sabates-Wheeler, Tefera, & Taye, 2006). Particularly, the climate change debate gained momentum in Ethiopia after the Copenhagen Conference on Climate Change in 2009, where Ethiopia represented Africa. The timing of most self-initiated policies and programs identified in Table 1 seems to confirm our impression that the Ethiopian (planned) climate adaptation regime was put in place largely in response to international discourses.

Whatever its genesis, at present, climate adaptation has captured the attention of the Ethiopian government. An expert from the Ministry of Environment, Forests and Climate Change (MoEFCC), which is a focal point for the coordination of all adaptation and mitigation activities both nationally and internationally, indicated in our interview that the ministry is working to make adaptation a primary policy issue on the agenda of all sectors. Moreover, for government officials, the agenda of "changing the national image" seems to have become important in the adaptation discourse, as illustrated by the following quote from a government official interviewee:

> *You know, we [Ethiopians] have been an example of drought, famine, hunger and you name it for a long time. We want to change the image of our country and make famine something from the past by devising an effective adaptation and mitigation strategy.*

As mentioned above, the Ministry of Agriculture identified PSNP as one adaptation option in the agriculture sector. Document analysis results and government officials' interviews indicate that the adoption of PSNP as a planned adaptation option is justified by its role in reducing vulnerability and enhancing community resilience. ASPPACC states that "the encouraging results of this programme need to continue as a tool to counteract climate change as well" (FDRE, 2011: 59). While PSNP included a climate change discourse, no amendment has been made to the program. As our result indicates, linking PSNP with climate change adaptation is effectuated at the national level. However, in speaking with government officials, we find that the linkage between the state interventions with the climate adaptation discourse is significantly lacking at local and regional levels, where PSNP is implemented in a business-as-usual manner.

5.1.1. Gender in the implementation of PSNP

As our document review indicates, on paper PSNP gives due attention to gender-based differences. The PSNP Programme Implementation Manual (FDRE, 2014) considers "gender equity" as one of its nine principles, and it states that:

> *PSNP is designed to respond to the unique needs, interests and capabilities of men and women to ensure that they equally benefited from the programme.*

The document adopts three mechanisms to enhance gender equity, namely the participation of women and men in the PSNP task forces (i.e. decision-making groups), recognition of women's productive and reproductive roles and differential access to resources by female-headed households.

Our field results from both study areas establish that women are indeed represented in both the *kebele* and *wereda*-level task forces. However, an interviewed female *kebele* representative in Zoble noted that the representation of women in decision-

making tends to be nominal due to dominant masculine norms that expect women to refrain from talking in public gatherings.

Regarding the attention to women's productive and reproductive roles, our results in both study areas seem to indicate that respondents disagree on the extent to which women are treated with some degree of leniency in PSNP-PW (i.e. allowing women to turn up later or leave earlier, or having women engage in "light" work). For instance, an implementing official in Mechare said the following:

> *We consider the condition of women. For example, they engage in light work and we let them leave early considering their domestic responsibilities.*

Yet female respondents reported that in general, no consideration is actually given to them. As a female respondent from Mechare stated, "*We do equal work and spend equal amounts of time as men do.*" The difference in perspectives arises in part from the difference in perceptions of what entails "light" work. For example, when men dig the ground for water harvesting activities or terracing, women may perform activities such as shoveling and carrying rocks. In absolute terms, women respondents do not consider carrying heavy loads of rocks as "light" work, even when this task may seem less "heavy" than what their male counterparts engage in (Jones, Tafere, & Woldehanna, 2010).

5.2. Interplay at work

Both autonomous and planned adaptation regimes attempt to tackle similar issues, and as a consequence, their respective actions become linked. All interviewed male and female household heads reported recurrent drought as the main challenge they encountered in their livelihood. This quote from a male interviewee from Mechare is a good illustration of the general sentiment encountered during the fieldwork:

> *While preparing my farm, my mind always wonders whether the rain will come early or late, whether there will be enough rain and what crop I shall grow, and what I would do in case of a crop failure. Yet, God only knows the answer.*

The main adaptation practices carried out by farming households in both study areas include on-farm adaptation (e.g. crop diversification, cropping time adjustment, planting cash crops), mobility (e.g. international and temporary local to regional labor migration), diversification (both on- and off-farm), storage and communal pooling (Mersha & Van Laerhoven, 2016).

PSNP as a planned adaptation regime aims to reduce vulnerability to drought by targeting the poorest of the poor and chronically food-insecure households (FDRE, 2011). The first two objectives of PSNP are (i) smoothing household consumptions by bridging the production deficit of chronically food-insecure farming households during the dry season and (ii) preventing poor households' productive assets depletion (Devereux et al., 2006). As discussed, for the majority of the households, the PSNP transfer is in return for labor-intensive public work. Thus, PSNP offers a kind of employment where households are expected to provide five days (6–8 h per day) of labor per month for each targeted household member. All our respondents indicated that PSNP-PW demands a considerable labor and time investment that causes a significant conflict with the autonomous adaptation activities of the type mentioned in the paragraph above. The third objective of PSNP is the development of community assets by means of environmental rehabilitation and infrastructure development (e.g. roads, health centers and schools) through public work (FDRE, 2014). PSNP's conditionality is based on the assumption that free and unconditional transfers may cause dependency among farming households, though the validity of this assumption is still under debate (Little, 2008).

5.3. The differentiated effects of interplay

Due to, for example, differentiated social conditions and positions and resource entitlements, farming households vary in how they are affected by and respond to climate change impacts (Agrawal, 2010; Perez et al., 2015). Particularly in the study area, as a result of gendered barriers, male and female-headed households rely on different adaptation activities, the effects of which differ as well (Mersha & Van Laerhoven, 2016). As a consequence, we expect that the interplay between autonomous and planned adaptation will have differentiated effects.

Our analysis indicates that in general terms planned and autonomous adaptation interplay has both positive and negative effects, which can be analyzed at two levels: between targeted and non-targeted households (where class-based differences are pronounced) and between male- and female-headed households within targeted households (where gender-based differences are pronounced). On the positive side, activities performed by PSNP-PW in the realm of community asset building have contributed to the improvement of the targeted districts. Both PSNP-targeted and non-targeted household heads who were interviewed affirmed that the situation of their village has changed in terms of resource rehabilitation and provision of infrastructure. They linked this change explicitly with the PSNP-PW intervention.

> *Look at the surrounding mountains. It was barren land, before, but now the vegetation is recovering as a result of our work* (male household head interviewee in Zoble).

Female respondents, in both study areas, also mentioned that unlike before the PSNP intervention, they now have better access (based on a locally agreed upon schedule) to forest and rangelands, as the conditions of these resources have improved. Similarly, government officials asserted that community asset building was one of the successful achievements of PSNP:

> *Two decades ago, these areas were turned into barren land. You could barely see a single tree around here. But now, look how the area has become green and moist* (local-level government official interviewee).

Linking community asset building to Agrawal's (2010) classification of adaptation activities of households, the positive outcome can be related to *communal pooling* – i.e. the use of resources such as forests – and *market exchange* (as influenced by improved access to roads). Hence, such asset building can contribute to reducing vulnerability and enhancing the adaptive capacity of the community at large to climate change-induced problems.

However, these positive outcomes are pronounced for non-participant households. Our results indicate that households that are not part of the PSNP-PW program (i.e. arguably the better-off households) benefit from community asset building without engaging in labor activities. As such, we would argue that the interplay between this particular planned adaptation regime and autonomous adaptation measures leads to *negative effects* for poor households who are targeted by PSNP-PW. These effects emanate from two aspects: the labor and time effect of PSNP-PW and restrictive preconditions attached to PSNP participation. We identify three autonomous adaptation measures that are negatively influenced by the interplay with the planned PSNP regime: effects that regard on-farm adaptation, mobility and diversification, respectively.

5.4. On-farm adaptation

Farming is at the core of livelihoods and is the main source of income for rural households in both study areas. In response to drought, farmers, especially male household heads, engage in on-farm adaptation such as crop diversification, crop timing adjustment and planting cash crops (Mersha & Van Laerhoven, 2016). All PSNP-PW targeted male household heads reported that time and labor that had to be dedicated to PSNP-PW compete with what can be invested in their own farming activities. An interviewee noted the following:

> *As you see, we are digging the ground on this sunny and hot day. By the time we are done, we are tired and it becomes difficult to work on our own farm.*

Similar findings on timing overlap have been also reported by other studies (cf., Devereux et al., 2008; Weldegebriel & Prowse, 2013). Government officials claim that the PSNP-PW has been carried out from January to June considering major farming activities such as seeding, weeding and harvesting (often carried out from June to November/December). Nevertheless, as farmers reported, land preparation, which is the main labor-intensive farming activity, overlaps with PSNP-PW time. This is particularly important for poor farmers, as physical resource barriers to adaptation such as lack of direct access to oxen to plough remain important in their adaptation process (Mersha & Van Laerhoven, 2016). Households with no oxen either rent oxen from someone else in exchange for ploughing the land of the owner or they rely on a reciprocal labor exchange system (Mersha & Van Laerhoven, 2016); both practices demand extra labor and time in addition to the assumed normal farming activities.

Additionally, the occurrence of drought and changing patterns in the onset of the rainy season render timing increasingly crucial in the adaptation process. Under these circumstances, the intervention puts targeted households in a difficult situation where they have to choose PSNP-PW over their on-farm autonomous adaptation practices. The following quote illustrates this dilemma:

> *I know that working on my farm could change my life. Participating in safety-net [PSNP-PW] is like focusing on daily survival, only. But I have to do it because there is no certainty about the rain. What I am sure of is that if I work here [PSNP-PW], at least I will get something for my family* (a male interviewee from Zoble).

5.5. Mobility

Temporary labor migration is an important autonomous adaptation in both study areas (Mersha & Van Laerhoven, 2016); however, due to restrictions that accompany PSNP against leaving the area even for short-period job opportunities, it may not be an option for targeted household heads. In our interviews, PSNP-targeted households stress that temporary labor migration could make a valuable contribution to their livelihoods, especially to cover expenses related to the schooling of their children, as the PSNP-PW transfers are insufficient. According to government officials, this mechanism is designed to discourage rural–urban migration.[5]

Some male household head interviewees reported that despite such restrictions, participants decided to leave since the wage from temporary work is better than the PSNP transfers. Yet, only male household heads with able family members such as a spouse and/or grown-up sons or daughters who can perform the PSNP-PW share for the remaining family members reported making this decision. The following quote illustrates this general sentiment:

> *There is no alternative income-generating opportunity available in the village to engage. If I go to other urban areas, I will lose my safety net quota (i.e. PSNP). Nonetheless, I decided to leave since my wife can take care of hers and our children's quota* (male interviewee from Mechare).

5.6. Diversification (off-farm and non-farm activities)

With the growing threat posed by both climate extremes and non-climate problems (such as land degradation), both male and female household heads seek off-farm and non-farm diversification activities in both study areas. Some of the activities reported by male respondents include carpentry work, trading, livestock fattening, and working on other farms. Meanwhile, for female respondents, important diversification activities include hairdressing, petty trade, handicraft, selling local drinks and laboring for others (see also Mersha & Van Laerhoven, 2016). Both groups also mention PSNP-PW as an alternative wage opportunity. Nevertheless, all targeted respondents frequently complain about the low amount of the transfer in comparison to the time and labor demands of the public work activities. An interviewed female respondent argues that:

> *The amount we get is far lower than our labor contribution. We repeatedly reported this to the task force and experts but nothing comes out of it* (female interviewee from Mechare).

Yet, despite the repeated complaints about the lower rate of the transfer, both male and female respondents targeted by PSNP reported that they stick to the program mainly because of the predictability of the transfer, as illustrated in the following quotations.

> *Although everybody thinks that we get aid and benefit, Safety Net is sweated labor. I don't think the payment is fair, but I cannot afford to leave it because there is no other opportunity here and at least we get the transfer regularly* (female interviewee from Zoble).

The limited role of PSNP in creating diversification to adapt to climate change is also reported by other studies (cf. Weldegebriel & Prowse, 2013). In contrast, interviewed government officials at all levels seem to consider the amounts that are transferred as sufficient. A typical response from interviewed official to our question about the fairness of the amounts and its impact on the livelihood of targeted households is the following: "*Unlike during the previous drought incidents, at least now we are able to prevent starvation*" (an interviewed government official at a region level).

The gendered assumptions in designing the program are vividly manifested in the relation between the perceived role of non-farm activities in the livelihoods of farmers, on the one hand, and the timing of the program, on the other hand. PSNP perceives of non-farm activities as a supplement to farming income in the program, an argument that is also used by interviewed government officials to justify the relatively low amount of the transfer. However, this perception underplays female household heads' lived experiences. Due to restrictive gendered norms that prohibit women's ploughing and constrains their labor, most female smallholders do not engage in farming. Instead, they rent out their land through share-cropping arrangements where they get one-third or half of the harvest (Mersha & Van Laerhoven, 2016). Consequently, non-farm diversification activities are not merely ancillary for the livelihoods of female household heads. Moreover, as increasing drought and

[5] The Ethiopian Constitution validates states ownership of land and provides farmers with a usufruct right that excludes the right to sell or mortgage the land only. By law, leaving farmland for three consecutive years (either by renting it out or transferring it to family members) results in the loss of the land. Other national policies and strategies, such as PSNP, are geared towards discouraging rural-urban migration, even temporarily (cf. Lavers, 2013).

fluctuation of rainfall leads to declining harvests, the share of female landowners will be further reduced, which in turn makes diversification a crucial adaptation and livelihood strategy for them. In this context, the insufficient transfer for their labor contribution affects female household heads more vigorously than it affects their male counterparts, as elaborated in the following narration.

> *I have been participating in Safety Net since the beginning. I also work as a domestic worker for better-off farmers and on their farm as well. Everything I earn is for daily consumption and nothing comes out that will change my life. I wish the payment from the government would at least become decent* (female interviewee from Mechare).

> *We sell our labor cheaply. Most of the time, when I get the transfer, I come home empty-handed after paying my loans. If I get any financial capacity, I prefer to engage in trading rather than participating in safety-net* (female interviewee from Zoble).

The timing aspect also strengthens this gendered assumption. As discussed above, PSNP-PW is not carried out for six months from July to December in order to avoid conflict with farming activities; this is apparently based on a consideration of men's experiences only. This pro-male household head nature of PSNP is reported in other studies as well (e.g. Mogues, 2013).

6. Discussion

As climate change is taking its toll, devising effective adaptation strategies and options that reduce people's vulnerability and enhance their adaptive capacity becomes urgent on the policy agenda. Adaptation is carried out by different actors, including households that try to devise autonomous responses to climate change (and other non-climate factors) and states, who by mainstreaming and more explicit, pinpointed interventions are building planned adaptation regimes. As Young (2002) has pointed out, these efforts inevitably result in functional interplay. The aim of our study was to explore the interplay between planned and autonomous adaptation, with a particular focus on its differentiated effects.

The study found evidence of functional interplay. In both planned adaptation and autonomous adaptation cases, drought is perceived as an important problem that influences livelihoods in the community. Functional interplay is illustrated by the way in which both government and smallholder farmers attempt to tackle this issue, and as a consequence, their respective actions become linked.

Our results indicate a differentiated effect of functional interplay across farming households, i.e. between targeted and non-targeted households (class-based difference) and between male and female-headed households within targeted households (gender-based differences). Positive effects that are more pronounced at the community level seem to benefit households that are not targeted by PSNP-PW; their autonomous adaptation options expand through enhanced community resources and improved infrastructure. The more vulnerable PSNP-PW targeted households, on the other hand, experience negative effects as their autonomous adaptation options are compromised and constrained. For them, a high reliance on PSNP transfers seems to create a vicious circle of vulnerability.

Moreover, our study depicts an additional gender-based differentiation, resulting from the fact that female-headed households are routinely targeted by PSNP-PW. For this group, the pre-existing gender imbalances and power asymmetry in the society put female-headed households in the most disadvantaged position within PSNP-PW targeted households. In the analysis, the following three issues emerge as a response to the question of why the interplay between these two types of adaptation (i.e. planned and autonomous) unfolds in this particular way.

6.1. Multiple interests and politics in planned adaptation

States that engage in adaptation regimes represent different interests, values and goals (Adger et al., 2009). Perhaps especially in developing countries, these are affected by many other priorities that require attention (Kumamoto & Mills, 2012). Hence, planned adaptation regimes are embedded in the state's daily practices and are thus entwined in politics (Weisser, Bollig, Doevenspeck, & Müller-Mahn, 2013). Consequently, analyzing the nature and outcome of the interplay between planned and autonomous adaptation regimes requires a nuanced understanding of the multiple interests and contexts where the two adaptations are being implemented. This helps to understand why some effects of the interplay are downplayed while others are accentuated. For instance, given the historical and political relevance of drought and famine in Ethiopia (Comenetz & Caviedes, 2002; Young, 2006), the narration *"at least they are not starving*" not only emphasizes the political gain of the current regime compared to its predecessors, it is also indicative of the political character of the state's agenda with regard to climate adaptation. As the intention seems to shift from reduction of vulnerability to "not starving," the autonomous adaptation regime of targeted households such as female-headed households, who are placed at the junction of the political and historical contexts, becomes compromised.

Simultaneously, the state seems to have an interest in depicting PSNP-PW as successful. Hence, PSNP-PW's contribution to the creation of adaptive capacity through community asset building and the "homogenization" of communities may have been overstated. After all, the constrained autonomous adaptation options for the most vulnerable households seem to lead to negative effects for some, such as female-headed households, and to differentiation at the community level. Furthermore, the case of mobility manifests the explicit exercise of power by the state through its planned adaptation regime. PSNP not only disregards temporary labor migration as an autonomous adaptation option, but it becomes a tool to reinforce the state's anti-mobility policy as well. According to Lavers (2013, p. 481), this restrictive nature of PSNP intends to ensure "social stability and state domination over the rural population."

6.2. Contested nature of adaptation in PSNP

Document review and interview results reveal that farming households are largely perceived as "beneficiaries" rather than as agents in the PSNP-PW program. This could be due to the fact that whereas now PSNP is framed in terms of climate adaptation, it originated from the social protection discourse. In this discourse, the notion of "beneficiaries" dominates. The concept of adaptation, however, could be approached as an action arena where actors such as individuals, community and state agents are actively engaged (Moser & Ekstrom, 2010). We believe that framing targeted households as "beneficiaries" is problematic because it obfuscates the ongoing autonomous adaptation practices of farming households. As indicated above, when the state intervenes without giving due consideration to autonomous adaptation practices, it ends up constraining the autonomous adaptation options of targeted households instead of expanding their choices.

6.3. Gender and PSNP

Indeed, PSNP aims to address the particular problems of women and female-headed households through the mechanisms identified

above, and the prioritizing of women as targets of PSNP-PW may very well result in general positive outcomes. However, as we have shown, it also means that households' autonomous adaptation choices are constrained. This negative effect hits female-headed households the hardest due to their already disadvantaged position in relation to local gendered norms and power asymmetry. Moreover, as Jones et al. (2010) note in their study, our result also suggests that the intervention seems to deal with symptoms of the problems (i.e. it addresses practical gender needs) (cf. Moser 1993) rather than tackling the root of women's disadvantaged positions.

7. Conclusion

The two study areas are recognized as important hotspots of major drought incidents in Ethiopia and have been repeatedly affected, including during the very recent drought in late 2015. As such, the sites are appropriate vehicles for studying the interplay between adaptation regimes and the nature and extent of the differentiated effects thereof.

The results of the study point to suggestions in designing and implementing planned adaptation. *First*, the interplay between planned and autonomous adaptation has both positive and negative effects, but these effects were experienced differently by different groups depending on their participation in PSNP and on gender lines. Thus, based on this finding we suggest that any planned adaptation policy intervention needs to recognize the heterogeneity of actors and their autonomous adaptation to minimize the trade-offs across members of the community and to ensure equity.

Second, the uncertainty surrounding climate change and the multifaceted nature of vulnerability to climate impacts, especially in the developing world, make "no/low" regret approaches to climate adaptation the dominant policy approach. Often, such approaches focus on reducing vulnerability and enhancing adaptive capacity. As we observed in our case, this can lead to situations where already existing programs and interventions are adopted as part of a planned adaptation regime (see also Weisser, Bollig, Doevenspeck, & Müller-Mahn, 2013); however, this may become problematic if the original assumptions and implications of the adopted programs and interventions are not critically re-examined. Therefore, we suggest that while there is a growing interest among scholars and policymakers to link planned climate adaptation interventions with other policy agendas in order to create institutional effectiveness, vigilant attention should be given to the underlying assumptions and the potential implications.

Third, many scholars have called for the need to consider gender-based differences in vulnerability assessment and adaptation in response to climate change (Pearse, 2016; Terry, 2009). However, although policies are beginning to respond to this call, so far little attention has been given to the root causes of their vulnerability – such as gendered institutions and gendered barriers to adaptation (Mersha & Van Laerhoven, 2016). Often, policies tend to deal with the issue by perceiving women as a vulnerable group that needs to be prioritized (Pearse, 2016). Thus, we suggest that planned adaptation policies should go beyond this natural reflex to tackle the deeply rooted gendered barriers and constraints that put female-headed households in a vulnerable position to begin with, so that both male and female-headed households can adapt to changing climate in an effective and successful way.

Conflict of interest

None.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.worlddev.2018.03.001.

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