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The labour movement response to climate change: a case study of South African Transport and Allied Workers Union (SATAWU)

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2012-08-24
http://hdl.handle.net/10539/11798

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CHAPTER 1
INTRODUCTION

1.1 Introduction

The task of responding to climate change by South African Transport and Allied Workers Union (SATAWU) is challenging because it requires the trade union to go beyond the traditional workplace concerns.

SATAWU began to engage in climate change through the International Transport Workers Federation (ITF) in 2006, where the ITF resolved to develop a position on climate change (Barrett 2010). In 2010 the ITF congress held a special session on climate change and passed a resolution which states that *"The ITF supports the transition to a green industry policy to achieve the necessary emission reductions and the creation of millions of new socially and environmentally sustainable jobs. This policy must be based on national programmes which links infrastructure investments, procurement policies, local content rules and positive support for domestic manufacturing to underpin the transition to a low carbon society," (ITF 2010).*

Locally SATAWU has been involved in the response to the National Climate Change Response Green Paper (referred to as the green paper) as an organization and through the Congress of South African Trade Unions (COSATU) when public inputs were requested by the government (South Africa 2010). In addition SATAWU participated in the COSATU policy framework on climate change adopted by the Central Executive Committee (CEC) in August 2011 (COSATU 2011).

1.2 Research Aim:

The aim of this research was to identify and analyse the challenges facing SATAWU in responding to climate change. The responses of SATAWU are not isolated but integrated in the COSATU responses, to which it is affiliated. The research was therefore contextualized in

relation to the response of the state, civil society and the labour movement in South Africa more broadly.

1.3 Main Research Question:

What is SATAWU's response to the challenges posed by climate change?

1.4 Research strategy

In order to answer the research question the research was broken into specific objectives which were achieved to constitute the larger picture, they are as follows:

Purpose/objective

- To establish the position of SATAWU on climate change, particularly their response to the government's green paper.
- To contextualize this response in relation to the COSATU programs and policies
- To investigate SATAWU members understandings about climate change.

1.5 Rationale

The significance of this research is the growing recognition that climate change will have serious socio-economic impacts (especially in Sub-Saharan Africa) and these will be felt most severely by the poor and the working class. The SATAWU policy officer, Jane Barrett (2011) has emphasized the gravity of the challenges facing SATAWU in responding to climate change. She has argued that to reduce transport emissions there is a need to shift from high-carbon to low-carbon modes of production. It means addressing unsustainable patterns of production and consumption and reducing the length of supply chains.

The particular challenges were identified in the course of the research through interviews with the SATAWU members and officials, the COSATU social policy unit (SPU) official and the Passenger Rail Agency of South Africa (PRASA) official. Initially it was expected that the following would emerge for example:

(i) The threat of job losses involved in the transition to a low carbon economy,

(ii) Changes involved in the increased use of the rail network,

(iii) Confusion among SATAWU members on the nature of climate change and its socio-economic impacts,

(iv) Uncertainty about the promise of 'green jobs,'

(v) The absence of clear policy on what a 'just transition to a low carbon economy' involves.

All of these challenges emerged in the course of interviews with the SATAWU members and in the debates centred on climate change (Barrett 2010; COSATU 2011; ITF 2010).

SATAWU's responses in particular are significant because transport is a major cause of climate change. The 2011 white paper underscores that the South African transport is the second most polluting industry after energy. According to a 2000 South African Greenhouse Emission Profile, transport constitutes 13% after the energy sector (Barrett 2011). According to Jane Barrett, the policy officer of SATAWU, road transport produces 74% of these carbon emissions, especially private cars. These private cars are not only a source of environmental damage but also mortality. South Africa has 17 000 deaths and 900 000 collisions annually (Barrett 2011). The transport industry employs more than 309 850 workers from whom the large portion is in the road freight sector which makes 33.18% of the whole transport industry

(Statistics South Africa (STAS SA) 2010). It is most probable that workers from road freight would be mostly affected.

It is necessary to understand the policy environment which frames the discourse on climate change. Furthermore the SATAWU officials were part of the COSATU programme to develop climate change policy and campaign of the one million climate jobs through research and forging links with mass democratic movements.

1. 6 Scope of the study

Though the South African transport industry includes aviation and maritime the study focused mainly on adaptation and mitigation related to road passenger, road freight, passenger rail and freight rail sectors. The literature that was reviewed is that which is related to land transport and not that related to marine and aviation even though SATAWU has members in those sectors. The reason being that, their carbon emissions' contribution is relatively very small as compared to other modes. These modes are not used by the working class as modes of transport for their daily lives. The general literature on the rail transport was not reviewed but to the extent that it is related to the shifting of the mode of transport as an ecological call.

1.7.1 Research themes

This research focused on the challenges facing SATAWU (according to the members and officials' understanding) in tackling climate change and contextualizes them in relation to the threat of climate change responses of the international community, the South African

government and the labour movement, specifically COSATU of which SATAWU is an affiliate. To simplify these challenges it was necessary to break them into separate themes that may be discussed one at a time.

1.7.2 The nature of climate change

Climate change involves an increase in global temperatures and more extreme weather events. These changes are due to increase in greenhouse gases (GHG), in the atmosphere, the most important of which is carbon dioxide (CO_2) which is released by anthropogenic burning of fossil fuels, such as oil, coal and gas (Treat 2011; Sustainlabour and UNEP 2008).

GHG are produced by burning fossil fuels and natural gases in the generation of the world's energy through various industrial processes such as Fischer-Tropsch Process which is used by SASOL in South Africa and in other parts of the world, contributing annually 20% of the entire GHG inventory in South Africa (Adam 2010). Eskom generation of electricity from coal makes it the leading world polluter at over 224.7000 metric tons of CO_2 in 2010 (SASOL 2011).

Climate change has significant social impacts. People are exposed to extreme weather conditions, droughts leading to shortage of food, shortage of water, floods, rising sea levels, natural disasters, migration, spread of epidemic diseases and many more (Ausebel 1993; Whitelegg 1993; Gore 2006; Joubert 2008; Bates 2008). These events destroy existing infrastructure and damage the livelihoods of the poor and the working class.

1.7.3 The international response to the threat of climate change

The reduction of GHG has become a global and national controversy. International controversy is in world fora organized by the United Nations Framework Convention on Climate Change (UNFCCC) called conference of parties (COP). COP meetings have been held annually since 1994 to develop a legally binding agreement that could reduce carbon emissions. Most unfortunately, to date no agreement has been reached by the negotiating parties. In these negotiations state parties which are considered as major polluters and minor polluters are at loggerheads with one another. There is also disagreement between developed and developing countries. They cannot agree on mitigation of GHG and adaptation to climate change. Nationally, the contention is between governments and local stakeholders: business, environmental movements, academics, political parties and labour movements. Some parties are advocating for reduction of carbon emissions and others are protecting their economic interests and advocating for the maintenance of the status quo.

Developing countries argue that they need funds which could assist them to be resilient and build their capacity to cope with climate change catastrophes, upgrade construction techniques, develop alternative technology that uses renewable energy and be disaster prepared. Developing countries are more vulnerable to climate change than the developed countries (Ausubel 1993). It is in these terms that a green climate fund is being advocated.

1.7.4 The South African government response to climate change.

South Africa was among five countries which are part of a soft agreement known as the Copenhagen Accord. This emerged from COP 15 held in Copenhagen, Denmark on December 7-19, 2009 when a legally binding agreement could not be reached but a fragile

political agreement was used as a token to extend the Kyoto Protocol first commitment period which ends in 2012 (Alliance Knowledge 2011).

It was at COP 15 that South Africa undertook to reduce its GHG by 34% by the year 2020 and 42% by 2025 (Heritage 2011; Fakir 2011). In 2010 the government developed a National Climate Change Response Green Paper (2010) in which public opinion and submissions were requested to formulate an effective climate change mitigation strategy. The green paper became the National Response to Climate Change: White Paper in October 2011. It clearly states that the South African government fully agrees to the conclusion of the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report that states that climate change is inevitable and it is caused by human action. The government undertakes to reduce GHG emissions in its economic activities despite the absence of an internationally binding agreement. The white paper outlines industries targeted for GHG mitigation and the transport flagship is among those listed as major polluters that need to adjust over medium term period (5-20 years). It also lists water, agriculture and human health sectors as key areas that need adaptation.

Despite all these commitments in the white paper, South Africa has put job creation and economic growth as its major priority and a matter of urgency. This was highlighted by the president of the republic during the state of nation address (Zuma 2011). Economic growth has negative ecological effects and the process often involves conflicts of interests. Growth that damages the environment challenges the role of the developmental state which has the constitutional duty to provide its citizens with a clean and healthy environment.

The mitigation and adaptation strategies to climate change are ill defined in the green paper. Ausebel (1993) describes adaptation to climate change as 'anticipatory' action which 'does not require waiting' and 'is a form of investment':

> *"A prime example of adaptation is weather forecasting. The weather forecast precedes the storm, so behaviour can adjust. Adaptation need not rely on one climate scenario but can prepare for a variety of conditions: drier, wetter, hotter, stormier and more variable" (Ausebel 1993:21).*

Mitigation to climate change refers to measures taken towards production activities which are carbon intensive to reduce hazardous emissions to the atmosphere. Mitigation has differential distribution of costs and benefits on economic productivity, it requires breaking institutional, behavioural and political barriers as well as utilizing new technology which creates new economic and social opportunities (Mertz and Davidson 2001). Mitigation programmes may include closing down coal generation of electricity in favour of that generated by wind or solar and even developing insulation of buildings against energy loss and enhancing the maximum utilization of the sun's energy in the building features.

The response to the threat of climate change will involve the re-allocation of state funds. The South African minister of finance, during the budget speech of 2011, indicated that infrastructure development in the form of roads is allocated substantial funds. However, he said there are plans to transform freight road transport to rail over a period of 18 years, and that South Africa is to curb ecological damage generally and carbon emissions specifically will be under the spot light in the COP 17 meeting held in Durban on November 28 to December 9, 2011 (Gordhan 2011; Heritage 2011).

1.7.5 The response of the labour movement

Generally in South Africa trade unions have tended to neglect environmental issues in their concern with jobs. For example trade unions were not involved in the struggle against ISCOR

pollution of the air and ground water in Steel Valley (Cock 2007). However COSATU has established a specific research project on climate change and developed its own policy which has shifted the pattern.

With its two million members and 20 affiliates COSATU, including SATAWU, is central to this issue, for example COSATU responded to the 2010 green paper. Fundi Nzimande, the National Labour and Economic Development Institute (NALEDI) researcher who was co-coordinating the project said COSATU wants "just transition strategies to a green economy in which there are as few job losses as possible" (Nel 2011).

COSATU organised the civil society conference held in Boksburg from October 27-28, 2010 which brought together 56 different interest groups and civil society organization (Mntungwa 2011). The conference resolved that the country should aim towards a "green economy" and sustainable development strategic approaches. This would mean transformation from the coal driven energy supply to a low carbon economy or "carbon free economy", develop eco-agriculture, energy efficiency and green buildings in the townships, renewable energy sector and "zero-waste jobs". Nuclear energy exploitation was condemned together with construction of high speed train railway (the Gautrain) in favour of the rich.

COSATU and forty civil society organisations are involved in a campaign to demand a one million 'climate jobs' (One Million Climate Jobs 2011). Climate jobs means jobs which reduce the amount of carbon emissions in an effort to prevent extreme weather events caused by climate change; enable capacity to adapt to climate change impacts and provide essential services (One Million Climate Jobs 2011). This was building on a United Kingdom coalition of trade unions which claimed that more than one million jobs can be created in the phasing

out of small vehicles, and trucks by the production of passenger and freight rail, manufacture of wind turbines, insulation of houses, production and the installation of solar panels to houses (Campaign Against Climate Change 2009; Neale 2011). In a public seminar held at University of Witwatersrand Johannesburg, March 23, 2011 Jonathan Neale argued that the state should be the employer because it has the funds from the public coffers, in order to take serious measures to end global warming and prevent its catastrophic effects in the future.

1.7.5 The South African transport system and SATAWU

SATAWU total membership stands at 165 000 consisting of transport, security and cleaning services. Road transport membership is 80190 (SATAWU 2011).

The South African transport system consists of aviation, air buses which are used for local and international travel; road transport and freight transport made of lories and pickup vans for goods delivery; passenger transport of buses, taxis, private vehicles and motor cycles; rail includes freight and passenger trains; lastly the sea is used for shipping of goods, commercial fishing and passenger leisure travelling. The transport system covers both public and private enterprises (South Africa 2010; Joubert 2008). The white paper indicates that South African airplanes have to meet European Union (EU) Aviation Directives on low carbon emissions in order to continue to be admissible in the EU in the future. In the corollary, potential negative effects are foreseeable as of now that, definitely the effects would impair on the livelihoods of the workers.

Transport is an issue of major importance to the working people in South Africa. South Africa has 700,000 kilometres of road and 20,000 kilometres of rail (Dimitrov 2003). In a National Travel Survey of 2003, 500 000 households reported that 32% of commuters use a

private car, 25% use a taxi, 23% walk, eight percent use a bus and six percent use a train. The survey points out that 32% of the households spend more than ten percent of household income on public transport while the other 19% spend more than 20% (Dimitrov 2003).

There are 9 970 381 registered vehicles on South African roads (National Transport Information System (eNaTIS) 2011). One attempt to reduce the carbon emissions which cause climate change would be to reduce this number through the provision of public transport. This could represent direct challenges to the SATAWU members as passengers in the public transport increased. The motor manufacturing industry is a major source of employment for 36 000 workers directly employed and for many South Africans motor cars are 'status symbols' embedded in powerful social meanings (Paterson 2007; South Africa Information and National Association of Automotive Manufactures 2007). Nonetheless, besides being instruments of environmental pollution car accidents cost of R50 billion a year (Barrett 2010). There is also a debate about reducing carbon emissions through increasing the rail network for passenger and freight transportation which has important implications for creation of green jobs and will affect the SATAWU members directly.

South Africa's commitment to reduce the emissions of GHG by 34% by 2020 is a positive initiative for the environment which could have adverse effects on the existing jobs of the SATAWU members in the transport industry (South Africa 2011). The mitigation plan could encroach on the civil rights of the workers if they are retrenched or transferred to other types of jobs due to operational requirements. SATAWU's basic role as a trade union is to protect and further the interest of its members as well as representing them in all occupational matters affect them.

Given that the transport industry is a major polluter industry second only to energy, and since road transport is the biggest in this industry, many workers currently employed as taxi drivers, truck drivers and other related workers would be the most affected as road freight shift to rail and public passenger transport is expanded by buses and passenger trains. Previous studies in Britain have shown that in similar transport reforms, though they were not environmentally based, drivers were not able to get other alternative jobs, because they were semi-skilled as opposed to unskilled workers (TEST 1986). In this case the research found suggestions from the SATAWU members and officials together with the COSATU Social Policy Unit officer (SPU) as to what should be done about those South African workers whom their jobs would be affected.

However new jobs could be created. A United States study of 2009 analysed by Centre for Neighbourhood Technology (2010) revealed that public transport investment creates twice as many jobs per dollar as new road transport compared to other investments such as housing. South African study shows that 460 000 jobs can be created in the transport industry by increasing the use of public transport, freight rail and maritime under the state control (One Million Climate Jobs 2011).

1.8 Conceptual framework

The key concepts to be used in this study are ‘sustainable development’ and environmental justice. In the course of the research these two concepts will be linked to provide a theoretical framework which emphasizes that questions of sustainability (e.g. shifting to renewable energy) must be linked to questions of justice; meeting the needs of the 25% of South African households who lack access to electricity (Gwenaëlle et al 2009).

During the apartheid regime environmentalism operated effectively as conservation strategy that neglected social needs. The notion of environmental justice represents an important shift away from this traditional authoritarian concept of environmentalism which was mainly concerned with the conservation of threatened plants, animals and wilderness areas, to include urban, health, labour and development issues (Cock 1991). It is linked to social justice as 'an all-encompassing notion that affirms the use value of life, all forms of life, against the interests of wealth, power and technology' (Castells 1997:132).

In this context the concept of environmental justice potentially provides an organizing tool for mobilising multiple and diverse communities into political action on a variety of rights and claims. The core of the notion of environmental justice as a powerful mobilising force lies in this notion of rights - rights of access to natural resources and to decision making. The notion of rights is used to legitimize demands and claims. The counter-hegemonic potential lies in the challenge to power relations that this notion of rights implies.

The American National Academy of Public Administration defines environmental justice as the right of "all citizens to receive fair treatment and that government should offer them meaningful involvement in decisions affecting their health environment and neighborhoods" (Messener 2003[sic]).

Environmental justice is also a development discourse which is linked to a critique of both the neo-liberal reliance on markets and the notion of economic growth being defined in statistical terms of gross domestic products (GDP) and growth national products (GNP).

Sustainable development is generally defined on bases of Brundtland Report, which suggests that it is the development done by the current generation using available resources to satisfy the needs of such a generation but considering that the future generation will utilize the same resources for their necessities. Such use should take into cognizance ecological effect on the planet earth, balanced use of renewable resource to be proportional to regeneration and that non-renewable resource exploitation bearing should be limited by introduction of their equivalent renewables (Cock 2008; Segger and Khalfan 2004; Whitelegg 1993). Segger and Khalfan (2004) further the concept of sustainable development to be in two forms. The first form is that, in order to understand sustainable development as a notion one has to recognize that it is international law based on existing resolutions, treaties, conventions and protocols signed by states for enforcement in respective countries. Secondly, the law should be strengthened and implemented.

Omo-Fadaka (1992) argues that development based on economic growth has been misguided for 40 years until the end of the 'era of development' in 1990 and it has led to extraction of natural resources by mining and emergence of unregulated dumping sites. The free market rules have created two major categories of the superrich and extremely poor people and countries. The United Nations Conference on the Human Environment held in Stockholm in 1972 had encouraged ecological protection against all forms of pollution but it has been business as usual though it was evident that continuing with the current economic growth notion would lead to mortality, economic and social collapse when the resources are exhausted. Omo-Fakada (1992) asserts that the Earth summit, held in Rio de Janeiro in 1992, programme against environmental degradation failed to identify the source of the problems being political power than providing technical solutions. The approach to sustainable development should be people centred and not free market. "If any new socio-political-

economic measures are to emerge which face up to the current crisis, they are not likely to emerge through capitalism and its free market activities" (Omo-Fakada 1992: 228).

The world summit on Sustainable Development held in 2002 at Sandton in South Africa familiarized the concept as its major focus of the summit which was to embrace the commitment taken by the previous environmental conferences about protection of the globe through collective action of the world bodies, governments, multi-national corporations and civil society organizations, as countries are developing their economies to reduce acts that affect the environment but no substantial progress could be seen to date (Segger and Khalfan 2004).

1.9 Structure of the research report

Chapter one provides the general outline of the entire research report, the background of SATAWU and climate change, it provides the research question and the rationale for doing this research. It is portraying it as a world agenda with different dimensions at international and national levels as well as in the labour movement. Lastly, it also grounded the theoretical framework which the argument in the research stands on.

Chapter two contains methodology employed to collect data and analyse it accordingly until reaching the conclusion. It is important to highlight that during the formation of the interview guide the questions were structured such that they develop a continuous argument touching all the themes in this subject. Chapter three defines climate change, its current and potential effects on the poor and the working class; scientific, social, economic and political debates on the subject picked from the literature.

Chapter four links the labour movement (SATAWU and COSATU) in South Africa in the climate change agenda locally and internationally. While chapter five is the core findings about the understanding of the nature of climate change and challenge facing SATAWU in responding to climate change from the members and the officials. It also contains recommendations. The last chapter, six, is the general analysis of the responses and the conclusion.

CHAPTER 2

METHODOLOGY

2.1 Introduction

This study took a qualitative approach because it investigated the challenges facing SATAWU in responding to climate change. The research report provides an analysis of these challenges based on grounded theory relating to sustainable development and environmental justice. The different understandings of the challenges and the responses were collected through conducting in-depth interviews with the SATAWU members and officials (Babbie and Mouton 2001; De Vaus 2001; Rakotsoane and Rakotsoane 2007).

2.2 Triangulation

Different instruments of collecting data were used in order to provide the study with broader information including:

(i) Documentary Analysis of primary sources such as the National Climate Change Response Green Paper, the SATAWU resolutions made at the 42nd ITF Congress, the SATAWU response to the green paper as well as the COSATU documents. Analysing these documents provided guidelines on questions that were asked during interviews.

(ii) In-depth interviews were done with twelve shop stewards from the SATAWU structures: the passenger bus sector, the passenger rail sector, the taxi sector, the freight rail sector and the road freight sector. In addition, two SATAWU officials were also interviewed. The COSATU SPU official and one PRASA official were interviewed as well. SATAWU is an affiliate of COSATU hence COSATU is involved at a national level whenever issues of policy are raised. The PRASA official was involved because public transport operators' opinions were necessary because PRASA is running passenger rail sector which is a parastatal in which SATAWU has

members. Transnet Freight Rail official could not provide time for the interview. The passenger and the freight rail sector will be affected by the climate change response policy.

(iii) Participant observation: The other data was collected by observation of the researcher in the COSATU-ITUC workshop on climate change, the SATAWU training workshops held in Durban and lastly the global day of action. The COSATU-ITUC workshop was part of the labour movement preparations for policy development ahead of COP 17 and mobilization of the one million climate jobs. The SATAWU training workshop was to sensitize the SATAWU provincial leadership and national sector coordinators about the union approach to climate change. The global day of action was a bench mark of the level of cooperation between the labour movement and the civil society across the world on climate change.

(iv) A review of the relevant secondary literature. These were published journal articles, books, conference papers and reports both hard and electronic copies.

2.3 Access

The SATAWU policy and research office and the COSATU SPU provided access for my participant observation in both workshops. Coombes (2001) warns the researcher using this method should take into consideration that people's behaviour may change because of the researcher's presence and the information collected may be unrealistic.

2.4 Interview schedule

The interviews were conducted with schedules of semi-structured and open ended questions to cover anticipated challenges of climate changes to the labour movement in the transport industry particularly SATAWU. Each respondent had one interview schedule. Semi-

structured questions ensured that all areas of the research were covered during the discussions (Rakotsoane and Rakotsoane 2007). The open ended questions requested participants to provide other challenges that they thought were possible to surface as experts in the field. An effort was made to fulfil Baker (1994) argument that the questions should be asked in chronological order that allows flow of the discussion from the beginning to the end.

2.5 Note taking

During the interviews the discussions were noted on the spaces provided for each question in the schedule. Each schedule required basic information about the participant besides the names as a form of identification and to ensure that the notes cannot be mixed up whilst anonymity is maintained. The notes were important in that they recorded observations made during the interviews such as gesture, facial expression from the informants as they cannot be captured by the tape recorder in the course of the interview. Furthermore they were used during observation of meetings and training workshops. The notes, schedule together with the transcription that were used for data analysis.

2.6 Pilot study

After the first three interviews, the responses from the participants were analysed to evaluate the effectiveness of questions asked to extract required information from participants. Coombes (2001) highlights that it is only after conducting a few interviews in qualitative studies that evaluation of question on the interview schedule can be done.

2.7 Type of interviews

Face-to-face and one on one interviews were conducted with all respondents using the interview schedule. This type of interviews allows the researcher to get more content from

the respondent due to the use of semi structured with open ended questions. Baker (1994) put much emphasis on establishment of relationship between the interviewer and the interviewee as it could affect the whole process. The interviews took thirty minutes to one hour. In some instances the participants were even inspired to spend more time with the researcher.

2.8 Tape recording

The use of a tape recorder was very useful to assist hand written notes to capture the response of the respondents verbatim. The tape recorder was useful when transcribing the words of the respondents exactly and more especially when the words resisted paraphrasing in the research report. It was imperative to request the respondents permission on the use of the tape recorder and even let the respondents to know their rights to request the researcher to switch it off if the answer to be recorded is sensitive and do not want it to be recorded (Weiss,1994). Only two respondents declined to be tape recorded. In other two instances the tape recorder was not used because the interviews were not conducted in private offices and these were not free from disturbances.

2.9 Transcribing

Recorded interviews were transcribed to form a transcription record of all participants. Each individual interview was transcribed on daily basis and marked in the same pattern as the hand written notes. The transcription record was used for data analysis and when writing the research report.

2.10 Participants

The researcher collected data by conducting interviews with the total of 16 participants. Amongst them were twelve SATAWU shop stewards, two national officials, the COSATU

SPU and PRASA official. Shop stewards were picked from the provincial leadership, the local shop steward councils and company level in the Gauteng Province. Shop stewards were interviewed to assess their understanding of climate change and what are its challenges and whether they understood the roles in the union and the consultation process as it was going on during the research. The shop stewards were identified in collaboration with the SATAWU officials. The minimum of two members were picked from road freight, passenger road transport (bus and taxi), passenger rail and freight rail sectors. One SATAWU official was part of the COSATU and the SATAWU climate change projects while the other was picked from road transport sectors which are the most vulnerable to climate change responses and this was the Taxi sector. Their participation in the research was important to inform the research on the dynamics of the national climate change policy development with reference to the transport industry. The COSATU official was interviewed because he was a delegate at National Economic Development and Labour Council (NEDLAC) which is a policy structure. The PRASA official represented the most recommended mode of public transport.

2.11 Population

In research a population normally refers to the total number of the research group. The population for this research is the SATAWU members and officials dealing with policy development. The sample was derived from the population.

2.12 Sample

The sample was drawn from the SATAWU shop stewards in the provincial level and local shop steward councils in the transport industry both passenger and freight to ensure representativeness of the type of membership and structure of the organisation in the Gauteng Province (Greenstein 2004).

Purposive and snowball sampling techniques were used to achieve the objectives of the research. Purposive sampling was ideal for people who had been dealing with climate change issues in the course of their routine work and deals with policy matters in both SATAWU and COSATU (Trochim 2006; Babbie and Mounton 2001). Snow balling was utilized where the researcher did not know all shop stewards and officials but were revealed by others during appointments and interviews.

2.13 Ethical considerations

Ethical clearance was provided by the Human Research Ethics Committee Non-medical at university and the research could not proceed until such clearance was obtained. The research ensured that participants were informed of their right to agree or decline to participate in the research and that in the course of the research they can withdraw. Participants' consent forms had to be signed before interviews. The research ensured anonymity of all the participants.

2.14 External validity

Considering that Johannesburg is the largest metropolis in South Africa the external validity cannot be used to generalize in the transport industry or the labour movement because the geopolitical economy of Gauteng province differs from other provinces. Gauteng Province is generally urban with multiple sectors of the economy influencing transport industry while other metropolis in other provinces are influenced by both rural and urban factors and depending on mining or agriculture. The study could only highlight possible outcomes for other metropolis for duplication of similar issues.

CHAPTER 3

CLIMATE CHANGE

3.1 Introduction

As this dissertation focuses on the challenges faced by SATAWU in responding to climate change it is necessary to discuss this phenomenon. It is a complex phenomenon which is understood differently by different actors. The chapter discusses the nature and the causes of climate change drawn from different scholarly literature, the activities which contribute to climate change and the effects proposed for shifting to a low carbon economy. The emergence of green jobs is seen as an alternative employment in the process of a just transition to a low carbon economy. The responses of various SATAWU members interviewed in the course of this research can only be understood against this background.

3.2.1 Causes of Climate change

Climate change is the result of the massive concentration of exhaust gases from generating electricity from coal, various industrial processes, transportation by locomotives using fossil fuel and vehicles; daily individuals energy consumption (Gore 2006). The major trend concentration is seen after the industrial revolution. Gore (2006) argues that only in about 200 years since industrial revolution generations which have lived in this period have dramatically changed the world which existed for more than millions of years ago. This is done by concentrating of GHG: carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), chlorofluorocarbon (CFC-11, CFC-12) and hydroflorocarborn (HFC-22) in the atmosphere (Gore 2006; Rodhe 1990; Whitelegg 1993). Sakhile Koketso in Jourbert (2008) breaks down GHG in this manner: carbon dioxide constitutes 80%, methane is 11.4%, nitrous oxides are 5.5%.

The concentration of the above mentioned gases in the atmosphere is said to cause 'greenhouse effect' which means they trap the sun's rays which then increase the temperature of the globe (Whitelegg 1993). It is this warming up of the globe which causes changes in the climate by altering the frequency and distribution of different weather events across the world (Khaya 2011). Also, it is from this characteristic where the gases derive the name of greenhouse gases because the greenhouse is always warm throughout the year.

Climate change is not limited to GHG concentration but also by significant deforestation for clearing the land for commercial agriculture, urbanization and timber production. Deforestation reduces trees that could absorb CO_2 to produce oxygen. Population growth and urbanization causes demand for food production in an industrial and commercial fashion. Industrial food production result in methane emission and use of energy intensive machinery and transportation (Barrett 2011b).

Economic growth causes creation of cities, which raises a need to construct offices, shopping malls, residential houses and roads on land that was occupied by floras which absorbed CO_2 and produced oxygen. Activities from these cities produce CO_2 and there are no plants to absorb it. In 1900 only 15% of the population lived in cities (Satterthwaite et al 2009), but today about half of the world population of 6.4 billion lives in cities.

Alam and Rabbani (2009) take a close look at Dhaka, the capital city of Bangladesh, contribution to global warming with the use of its national GHG inventory of 15 178 giga grams per year. The energy sector consisting of electricity production and other industries emitted 60%; transport pollution was at 17% and other smaller segments covered the

remaining 23%. The transport sector of Dhaka consists: road, rail, water, air. Out of that 17% road transport contributed 70% of the GHG (Alam and Rabbani 2009).

3.2.2 Effects

Extreme weathers are already being experienced in the form of floods washing away houses, crops and other infrastructures such as roads, tornados blowing away houses in communities, high temperatures causing bush fires in the country side and forests, massive snowing in tropical north, droughts in the equatorial regions (Gore 2006).

Another major impact of climate change is food insecurity caused by drought and water shortage which affects crops in the fields. About 80% of the world food produced by the farms is dependent on rainfall. It is then complemented by 20% which is irrigated (Bates et al 2008). During periods of droughts or El Nino in different regions water shortage leads to water rationing and competition between agriculture and processing industrial sectors (Bates et al 2008). Shortage in the supply of food results in the increase in food prices, which then affect the workers and the poor.

Climate change has direct effects on food security in the world. Bates et al (2008) states that if temperature rises between 1-2ºC it would affect different plants and animal species and eventually leading to food insecurity. For instance direct impacts can be seen by decline of production of cereal in some regions. Cereal accounts for more than half of food people eat daily as carbohydrates, its shortage would put more and more people in 'chronic hunger'. Besides population growth increases the demand for food production. Democratic Front Left of South Africa (DFL) estimates that 47% of the people in Johannesburg are 'food insecure' and the number is bound to increase as climate changes (DFL 2011).

International Panel on Climate Change (IPCC) report (2001a) cited in (Mukheibir and Sparks 2006) underlines that water cycles would be severely affected by climate change regionally. The impact would alter both surface water bodies: flowing streams and wetlands; and underground water across the region and affect the supply for economic needs (industry, hydropower, and farming) and domestic needs. The amount of annual or seasonal precipitation determines whether it is drought or rainy year.

Forced migration is beginning to be experienced in different parts of the world, since climate change studies began until 2009 environmental circumstances have compelled 24 million people to move from one place to the other and the number is projected to rise to 50 million people in the near future (ILO 2008; Ulf et al 2010). Barrett (2010) indicates that other studies show that there are 150 million "climate refugees" who have suffered from drought, famine and floods. And each year there are 262 million people affected by climate catastrophes.

According to United Nations Children's Fund (UNICEF 2010) press release, 884 million people are in need of clean drinking water supply, which causes death of thousands of children in developing countries and mostly sub-Saharan Africa and South Asia (Haukauf et al 2010; UNICEF 2010). It is estimated that 1.8 billion people feel the burden of water scarcity in Africa and Asia (ILO 2008).

Naturally, Southern Africa Development Community (SADC) is said to be under the stress of water scarcity and climate change has increased this challenge in the region. Mukheibir and Sparks (2006) refer to the fact that there is distinctive record of three droughts in two decades: 1986-88, 1991-92, 1997-98. South Africa's average rainfall has been recorded to be

500mm per annum for the fact that there are areas with high rainfall like the south eastern coast and those which are arid north western and semiarid interior (DWAF 1994 cited in Mukheibir and Sparks 2006). Already, 11 municipalities out 19 in Water Management Areas are described to be under water scarcity and have resorted to use storage tanks because drought dried out their ground water capacity (Mukheibir and Sparks 2006).

McAllister and Droster (2011) rainfall record (graph) from 1996 to 2010 shows exactly that the annual rainfall is very erratic. There are years when the country is very dry and those that are very wet. The rain reached a peak in 1996/97 with a total of 1174mm while 1997/98 was characterized by dramatic fall at 679mm. The average rainfall for thirteen years was calculated as 844mm. Looking generally across the graph, it can be realized that it was only on three instances that rainfall was just over 1000mm while a considerable number of years it was in the fluctuates along the average and a substantial decrease was recorded for four years while for another year (2002/03) a steep fall ever was recorded.

Similarly, fisheries would also be affected by the rise in water temperatures which would affect mainly rivers evaporation, they can die or conditions would be suitable for over fishing by people in the localities. Cattle are also reported to have poor milk production during warmer temperatures (Bates et al 2008). Death of livestock may also arise from starvation caused by over grazing dry land which has exceeded its carrying capacity. When temperatures rise *velt* areas become vulnerable to wild fires which destroy vast amount of land suitable for livestock grazing.

Excessive rainfall causing floods is deleterious to crops which are to be harvested. In the first place floods wipe away the crops and the fields therefore reducing the agricultural area in the

future. Secondly, crops are damaged by inundation. General soil erosion result from lack of vegetation cover and over extraction of ground water. In overall, these cause shortage of food and affect people's livelihoods (Bates et al 2008).

Satterthwaite et al (2009) allude to the fact that millions of people living in urban cities would (in about a decade) be affected by either miscalculated measures taken or failure to take appropriate steps about climate change challenges by those in authority. Due to the fact that conditions under which poor urban people live under, render them vulnerable in times of natural disasters or erratic weather trends caused by climate change.

According to Satterthwaite et al (2009) transport would be at the risk of being affected by floods. Different coastal cities would be the most affected when sea levels rise and extreme weathers are experienced. In 2004 Ethekweni Municipality in Durban adopted Municipality Climate Protection Programme (MCPP) aimed at localizing environmental interventions, build resilience and rescue plan for its 3.5 million people (Satterthwaite et al 2009).

3.2.3 Counter arguments to climate change

Muller (2011) contends that water crisis in South Africa would not be the result of climate change but population growth, economic growth and urbanization. In his seminar paper, "What is South Africa's real crisis?" he refuted claims that South Africa is facing challenges posed by climate change, but instead South Africa's immediate need is water. He said South Africa should focus on constructing dams at the moment because in the next ten years it will be in water crisis should there be drought. He said "Drought comes suddenly. Just because you had a flood last week, it doesn't mean to say the drought hasn't started" (Muller 2011). He further argues that the population of Gauteng keeps on increasing and there is need to get

people to access water so the level of consumption would be above the current water capacity. He doubts the effectiveness of 'fashionable green solutions' such are water harvesting from the roofs and removal of exotic species. He stated that Durban and Cape Town are withholding huge investment projects because there is not enough water for all economic activities.

Hackauf (2010) unveils the arguments made by some scientists in the world to counter climate change awareness campaign; Woudhuysen has published a book called *Energise* which argues that the human race should invest on developing huge energy storage capacity to counter global warming. He equates climate change to terrorism of Al-Qaeda which needs to be confronted by scientific finding because it relies on predictions and alarmist propaganda. Woudhuysen cited in (Hackauf 2010) says nature cannot be preserved but can be managed. "Human beings need to make bigger impact on the natural world for future generation. That's the legacy I am looking for: bigger and better. We cannot leave the future generation the same world…" (Hackauf 2010: 262). He counters the Brundtland report (World Commission on Environment and Development published in 1987 which brought an acceptable definition of sustainable development) by saying the current generation cannot advocate for needs of the future generations because they are not elected representatives by those unborn children. He says there is misconception of world problems by claiming that with climate change problems will be worse.

Despite a small number of descending theories, there is an agreement amongst weather scientists about climate change and these effects are coordinated by Intergovernmental Panel on Climate Change (IPCC). The general agreement is that climate change is caused by GHG from different economic activities including transportation, it is already befalling some parts

of the world and the worse to be affected are the poor in low income and middle income countries.

3.3 Economic growth and transportation

Transport is a major source of carbon emissions. Hoyle and Knowles (1992) believe that human beings need for transportation is inevitable for they satisfy both human needs and economic requirements, although they contribute heavily to the environmental degradation with regard to land use and air pollution. The transport industry is integral to other sectors of the economy and it employs a considerable number of people providing support services.

Haukauf et al (2010), indicates that economic growth raises the demand for transport. People in cities use public transport; a case in point is Hong Kong where 94% of the total transport is public transport. Studies have revealed that many people do not have their own vehicles and that public transport is not easy for areas in the sub-urban and rural areas. Generally transport is seen as one of the major contributors of GHG emitted. In 2004, about 95% of the world GHG consisted of petroleum by products while transport GHG was 23% of the total and three quarters of it was generated by road transport (Haukauf et al 2010).

Maddison et al (1996) posit that the living standard in Britain has risen; this resulted in 67% of the population to own vehicles for the last three decades. Thus, a considerable decline in the public transport has been seen. Bicycles are no longer used by adults but by children. The rising number of vehicles has rendered roads to be congested of traffic, air space filled with exhaust gases pollutants and reduced speed in large cities such as London and as a result there is demand for more roads to be constructed. Concerns about spatial environment has developed extremist views in Britain, there is a growing social movement of people who term

themselves ‘very worried’ about the transport problems. They have embarked on road blockades and destruction of any road constructions; on the contrary, an opposing group of road lobbyists has come to the front to counter and advocate for freedom to use public roads. Maddison et al (1996) describe this situation as unpleasant for road lobbyists to be using civil liberties to advance their selfish interest. Reference is made to Hardin (1968) article “Tragedy of the commons”, where individual members of the society would want to utilize natural resources as much as they can as long as there is no regulation. Town planners are blamed for locating shopping malls outside town so much that the plan justifies the action of road lobbyists.

Iles (2005) indicates that the United States of America (USA) is leading the rest of the first world in terms of transport pollution and oil consumption since it has the largest fleet in the world, used for travelling and transportation. Iles (2005) warns that the current trend on the use of fossil fuel which is non-renewable and pollution on the environmental is not sustainable though it would be quite some time before the impact is felt. Iles (2005) suggests that transportation should be planned now to avoid dramatic changes which may have to be implemented in the future. This would affect people’s way of life especially those who cannot do without private transport and use air buses frequently. “Non-essential and leisure travel may have to be restricted. There will have to be much greater reliance on public transport” says Iles (2005:36). Iles (2005) sees the only modes of transport which are totally sustainable and do not cause harm to the environment and human health, animal and vegetation to be human powered (walking and cycling) and animal modes. Nonetheless, water and public transport are better than private cars, conventional buses are four times efficient than minibus/taxis and 20 times more than personal cars (Iles 2005). And

prioritizing the most effective type of transport would minimize wasted capacity and infrastructure development.

Iles (2005) propose some basic housekeeping rules for the employees in the transport industry: buses in a queue at a depot or terminal should not be left with their engines running, to ensure acceptable exhaust emissions, diesel injector pumps should be properly maintained by the workshop, used oil should not be spilled over or let to run down in the water drainage and government transport department should enforce statutory regulations.

Iles (2005) acknowledges several improvements being made in respect of developing transport which does not rely much on the fossil fuel though it is undergoing intensive scrutiny with regard to reliability. Some countries have focused on generation of electricity by renewable energy: solar and wind; while others are exploring nuclear energy which has the risk of catastrophic accidents. The state is urged to be the main role player in different areas lest the market is left to be wasteful in public transport by increasing capacity. Iles identifies conflict between economic growth and sustainable development by pointing the position of the USA government which dissented to embark on energy reduction measures because they would hamper productivity and the economy.

Similarly, Farrington (1992), claims that GHG produced by vehicles are not only hazardous to the environment but to the fauna, the flora and the human beings. They affect the respiratory system and the nervous system of children. Exhaust gases from vehicles constitute approximately 50% of benzene non-smokers inhale daily, nitrous oxides and sulphur oxides produced cause acid rain which affects the plants (Farrington 1992). In Britain vehicles emissions constitute 20% of total CO_2 inventory 40% of acid rain (Farrington 1992). The

argument is complemented by Iles (2005) on the basis that highways cause environmental damage to the lives of the rural people and affect the quality of their lives and even worse they consume non-renewable resources.

Selection of the type of transport to be used for different purposes is critical to the environment, according to Haukauf et al (2010), water freight is found to be the least emitting while road pollutes the atmosphere five times more and rail is lower than road. In America rail is used for long distance while road is used for shorter ones, in Europe roads transport is preferred than rail with a little using aviation though the numbers are improving. People using public transport choose high speed train and high speed coaches which utilizes more energy than ordinary ones.

Haukauf et al (2010), suggest that ecological measures should be taken by states and motor manufacturers to develop new sources of energy for vehicles though they have some drawbacks. Recently Volkswagen withdrew its latest model which was reported to consume only three litres of petrol for 100 km, and China electric car (McCar) is reported to be on trials has the problem of exploding batteries (McDonald 2011). The Chinese model is also said to travel for 100km as a measure to fight pollution and to develop appropriate technology that would not demand oil or gas supplies which have to be imported. China engineers are struggling to develop strong rechargeable batteries that use domestic electricity.

There are broad reasons for using vehicles from one individual to another and from one country to another but in the final analysis they cause ecological crisis which need technology improvement in sourcing power and statutory controls on the use of private vehicles in favour of public transport and other sustainable modes of transport.

3.4 Reducing emissions

Reducing emissions is full of controversy as all attempts failed since the 1992 Earth Summit until 1997 when a proposal of Kyoto Protocol was passed to make the UNFCCC implementable and the protocol came into operation in February 2005 (Nhamo 2006; www. uk.oneworld.net). The protocol has put a target of five percent reduction of GHG to 1990 levels by developed countries and 2012 was set as the end of the first commitment period (Nhamo 2006). The Copenhagen summit (COP15) was a turning point against the protocol when some developed countries which are called annexure1 countries refused to have a legally binding agreement on emission reduction. The United States of America as the largest emitter has not acceded to the protocol.

The protocol has a market approach to emissions reduction called carbon trading. A certain amount of money can be equated to certain carbon credits (volume of GHG that can be emitted into the atmosphere). The carbon credits are said to be cheaper in developing countries. Developed countries have used this approach because it allows them to continue polluting the environment by investing in Clean Development Mechanism (CDM) projects in developing countries aimed at mitigating their GHG emissions in return for carbon credits. CDM project includes renewable energy generation, waste management project and agricultural projects (Nhamo 2006).

Countries and regional trade blocs are making efforts to reduce GHG in their activities; in the European Union through the Maglev network short flight trips are being replaced by fast rail transit as a measure to reduce GHG emissions. Large aeroplanes are used for long distances to economise in terms of fuel consumption and reducing the number of flights (Hackauf and Haikola 2010).

Mining companies in South Africa are contesting the increase of carbon tax proposal on coal production per ton from R75.00 to R200.00 on the bases that the act would undermine competitiveness of South African coal products in the global market (Salgado 2011). The coal giants argue that South African government is putting itself ahead of other governments which have not reached consensus in implementing carbon taxes of their coal industries hence this would impair on their daily operations which would affect jobs as companies would be bound to move to friendly tax regimes.

Farrington (1992) believes that political measures should be taken to reduce energy consumption by a green tax which would increase fuel prices which could cause people to use public transport instead of their own cars. Traffic problems are caused by 'car-borne shoppers'. The other suggestion was that people should be encouraged to walk and ride on bicycles as they are more energy efficient. Paradoxically, political decisions are less likely to be taken yet people may be ready and for high valued environment.

About 80% of South Africans are dependent on public transport (CAMCO and TIPS 2010). The upgrading to BRT in Johannesburg for example, is seen as a vital measure to reduce transport GHG, improve its efficiency and reliability to old user and attraction to private car motorists who live in less than half a kilo metre from Rea Vaya routes (CAMCO and TIPS 2010).

3.5.1 Shifting to a low carbon economy

Shifting from a high carbon economy to a low carbon economy would be a mammoth task because the world had depended on this type of energy for three centuries and so almost everything which has been developed depends on it. Shifting to a low carbon economy has

implications for jobs that would be affected in the process but it has the ability to create new jobs. COSATU (2011) suggest that one freight train can replace 150 semi-trailers on the road as mitigation for transport emissions. Contrary to that Transnet Freight Rail rolling stock remains carbon intensive in that the engines are diesel-electric and utilize electricity generated from coal. A shift to public transport from private motor cars will bring new challenges to the SATAWU members associated with passenger's influx in the rail and bus sectors. The union membership could increase because of new employment opportunities.

The transition involves paradigm shift in the consumption pattern of resources to a sustainable manner. The re-emergence of Keynesian type of duties by the state are expected in the provision of public transport, electrical energy to houses social protection for workers and public finance for implementing UN Advisory group on Climate Finance (AGF) (Neal 2011; Barrett 2010; ITUC 2010).

However there are deep attachments to private cars as symbols of status, freedom and independence (Gorz 1981; Paterson 2007). Gortz (1981) considers a private motor car ideologically to be a luxury good that is manufactured for the few 'haves' for them to enjoy a sense of status, importance, individualism, liberty and mobility; paradoxically this notion erodes once everybody else have a motor car. What is amazing about the motor car is that it occupies public space and drivers do not have the courtesy to respect other road users such as pedestrians to the extent that they knock them down. Growth of cars has undermined mass transportation like rail system until the emergence of high speed trains which are aristocratic in nature since they compete with airplanes and are expensive (COSATU 2011). Furthermore, motor cars have negative effects in the communities they pass through and surrounding them, they cause unbearable odour, choking, dust, noise and congestion.

Paterson (2007) subscribe to Gortz (1981) emphasis that a motor car is individualistic nature and its contradictory characters of value based on limited ownership which perpetrates social injustice and inequality on the bases of class, gender and race in different societies. Paterson (2007) identifies a private car as part of fundamental sources of environmental crisis because its mass production depletes various non-renewable and scare resources. Its operation day in and day out consumes fossil fuel causing climate change, soil degradation and demand spacious arable land for roads and parking whilst impacting on human health.

According to Gortz (1981:76) disuse of motor cars requires 'a cultural revolution' from below:

> "For in order for people to be able to give up their cars, it won't be enough to offer them more comfortable mass transportation. They will have to be able to do without transportation altogether because they'll feel at home in their neighbourhoods, their community, their human-sized cities, and they will take pleasure in walking from work to home-on foot, or if need be by bicycle…"

3.5.2 Transport reforms

Friends of the Earth commissioned TEST to conduct a study which evaluates transforming modes of transport in Britain from 1964 to 1984. The report (TEST 1986), claims that the transformation process resulted in selecting only economical (profit centred) policies which resulted in the loss of jobs. The report suggest that if the process had been intended to create employment then a compromise could have been reached to balance the capital intensive locomotives and labour intensive strategies but the situation is that the reforms were trying to cut productivity costs. This led to the reduction of staff and the vast reductions were seen on the rail transport than the road. The introduction of coaches which were one person operated

(OPO) phased out the job of conductors. TEST (1986) argues that OPO only considered the financial savings by job cut of the corporation without reflecting at the taxes lost on the wage and the cost of maintaining such a person by the state as well as the decline in other related sectors that benefited indirectly.

TEST (1986) discussed proposals about the rail freight in which the intension was to ban lories in the cities and to be replaced by pick-up vans. Whereas the measure is seen to be a form of employment but that would have ecological effects in cities. Besides, the rail was recommended for long distances. This was a blow for truck drivers because one train would do the work of 45 trucks, unlike truck loaders; drivers could not be relocated to unskilled work of modal transfer at different depots, conversely environmental benefits were achieved.

South African proposed modal shift is not environmentally oriented but market operational requirement of replacing the old trains designed in the 1950s by the new ones to meet timetable schedules to the passengers, (Khayile 2011). The minister of transport Sbu Ndebele and Passenger Rail Agency of South Africa (PRASA) director went out to seek for investors to partner with them in phasing out the old 'rolling stock" to replace it with the new 'rolling stock'. It is anticipated that the purchase would begin in 2012 and this would in a way include the construction of high speed railway line between Johannesburg, Durban and Cape Town.

Farrington (1992) suggest that transport reforms should be made from hazardous fossil fuel driven vehicle to electrified trains if the electricity can be generated from renewable energy and non-fossil fuel sources. A more appropriate mode can be double decker buses for urban areas. Buses which use vehicle-guided system should be provided with their own lanes to

allow them being controlled by lateral wheels and not steered while in the system and only when they are in the conventional roads. This system was operational in Adelaide.

Knowles and Fairweather (1992) propose the appropriate transport would be rapid rail transit which delivers large number of people between sub-urban areas and cities for not longer than 40 km but need to be separated from road traffic. They can deliver 20 000 passengers in an hour and they are suitable for large cities which have over 100 000 residents. Advantages of light rail transits are: they are cost effective as they are very light, require low cost engineering and operate automatically. They have been in use in Europe and North America.

A smart growth and transport conference was held in Baltimore, Maryland in 2002 where Rue (2002), pointed out the good experience of how smart growth and transport engaged people in the communities instead of making decisions for them. In Honolulu people were encouraged to use public transport, so they preferred to have bus rapid transit (BRT) instead of light rails because they did not want electrical wires over their houses. Bike lanes and alternative off-road bike paths had been provided for people who preferred riding bikes.

The conference discussed problems facing public transport which have to be considered. Firstly, was whether it was possible for people to walk, cycle and use transit? It was highlighted that there is a 'car culture' in the United States of America which motivates people to own cars as a social value, people travel because fuel cost low. Secondly, it was pointed out that public transport has poor image: it does not provide quality service; it is not safe and it is a question of class or race: people of the same class may be comfortable when they are next to those of their own. Lastly it was under scored that political contestation may be that people who live in the suburb may resist transit. However, recommendations were that

transit agencies would be persuaded to bring innovation to their services which would answer new challenges. Counties were recommended to implement paid paring areas that would increase driving costs of motorists.

3.6 Green jobs and sustainable development

'Green jobs' are often posed as the answer to both South Africa's unemployment crisis as well as the ecological crisis, of which climate change is the most dramatic manifestation. According to Statistics SA job losses range from 0.7% to one percent between end of 2010 last quarter and 2011 first quarter. These also differ from sector to sector. Transport sector suffered a greater blow in 2010 with the loss of 37 000 jobs, though this figure was slightly lower as the average jobs lost is 58 000. At the end of 2011 first quarter unemployment stood at 25% which is one percent (1%) increase from last year which was 24.0% (Statistics SA 2011a).

Many triumphalist claims are made about the potential of 'green' or 'climate' jobs. As Maas (2010:8) writes

> "Every body's talking about green these days, sustainable architecture and urbanism are both getting almost universal attention. And they deserve it. Who can oppose green? It's a cure for our unhealthy environment; it can prevent our resources from disappearing and entire species from dying out. And if we work out hard enough green might solve our climate change problem…"

Advocacy for mitigation and adaptation of climate change has opened a door for creation of 'green jobs'. 'Green jobs' emerge in the process of generating renewable energy, by implementing measures that reduce ecological effects in the course of production and managing waste material. These jobs are sustainable in nature and fall within the scope of

decent jobs (Campaign Against Climate Change 2011; ILO 2008). The definition could be extended further to include the utilization of natural resources in a sustainable way and particularly the protection of the ecosystem and biodiversity, the reduction of energy, materials and water consumption through high-efficiency strategies…" (Cock 2010:1).

COSATU defines decent jobs as those which are for the benefit of the working class the wage above the living wage and the profits are redistributive in nature, the economic system is less exploitative, the workers have basic services that they need and there is observance of social values of the workers (COSATU 2010). COSATU argues that the decent quality jobs cannot be temporary but should be permanent.

Webster (2011) describes decent work as a concept which was introduced by International Labour Organisation in 1999, it should not be seen as a commodity that can be measured but it has tenants such as full employment, right to work under admissible, legal and standard working conditions, right to social protection and right to social dialogue. The worker should not be subjected to 'China wage" because there may not be any choice. Sustainable jobs embrace the skills and value of the employee as well contributing to development.

South Africa Solar Thermal and Electricity Association appeal cited in Business Report March of 31, 2011 states that for the construction of concentrating solar power (CSP) station which would have produce 2000 MW electrical power output by 2020, and further 10 000MW by 2030. It is projected that the first phase of the project would yield 80 000-100 000 'green jobs' during construction, while the manufacture of material would create 3000-5000 jobs and approximately 8000-10 000 permanent operational jobs (Salgado 2011).

Rowan Goeller, the director of the Group Five 150MW CSP project to be constructed near Kath in Northern Cape claims that it would hire roughly 1000 construction workers and 80 permanent service jobs (Salgado 2011). He further argues that CSP technology is a leading renewable energy plant in job creation because it is capable of using locally manufactured goods.

'Green jobs' should be considered in the context of decent work so that the livelihoods of the people are properly taken care of by whoever proposes green jobs projects as the next employer. However, economic globalization has relegated decent work because of the low wages called 'China price' (Webster 2011).

3.7 Social justice

The concept of environmental justice potentially provides an organizing tool for mobilizing multiple and diverse communities into political action on a variety of rights and claims. The core of the notion of environmental justice as a powerful mobilizing force lies in this notion of rights - rights of access to natural resources and to decision making. The notion of rights is used to legitimize demands and claims. The counter-hegemonic potential lies in the challenge to power relations that this notion of rights implies.

Environmental justice is also a development discourse which is linked to a critique of the neo-liberal reliance on markets and the notion of development which defines growth in economic terms.

Sustainable development is generally defined on the bases of Brundtland Report, which suggests that it is the development done by the current generation using available resources to satisfy the needs of such a generation but considering that the future generation will utilize the same resources for their necessities. Such use should take into cognizance ecological effects on the planet earth; balanced use of renewable resources to be proportional to regeneration and those non-renewable resources exploitation bearing should be limited by introduction of their equivalent renewables (Cock 2008; Segger and Khalfan 2004; Whitelegg 1993). Segger and Khalfan (2004) further the concept of sustainable development to be in two forms. The first form is that, in order to understand sustainable development as a notion one has to recognize that it is international law based on existing resolutions, treaties, conventions and protocols signed by states for enforcement in respective countries. Secondly, the law should be strengthened and implemented.

Omo-Fadaka (1992) argue that development based on economic growth had been misguided for 40years until the end of the 'era of development' in 1990 and it has led to extraction of natural resources by mining and emergence of unregulated dumping sites. The free market rules have created two major categories of the superrich and extremely poor people and countries. The United Nations Conference on the Human Environment held in Stockholm in 1972 had encouraged ecological protection against all forms of pollution but it has been business as usual though it was evident that continuing with the current economic growth notion would lead to mortality, economic and social collapse when the resources are exhausted. Omo-Fakada (1992) assert that the Earth summit held in Rio de Janeiro in 1992 programme against environmental degradation failed to identify the source of the problem being political power than providing technical solutions. The approach to sustainable development should be people centred and not free market. "If any new socio-political-

economic measures are to emerge which face up to the current crisis, they are not likely to emerge through capitalism and its free market activities" (Omo-Fakada 1992:228).

The world summit on Sustainable Development held in 2002 at Sandton in South Africa familiarized the concept as its major focus. The summit embraced the commitment taken by the previous environmental conferences about protection of the globe through collective action by the world bodies, states, multi-national corporations and the civil society organizations. Though countries were developing measures of reduce acts that affect the environment as they grow their economies there is no substantial progress visible to date (Segger and Khalfan 2004).

3.8 Conclusion

There is a vast amount of literature that shows that transportation is one of the major contributors that causes climate change through emission of GHG.

The literature raises alarm on the past, current and future ecological effects of these economic activities on climate change risks. The literature recommends what needs to be done to prevent the situation from worsening.

The literature suggests that green decent jobs should be created to compensate job losses that will result in a shift from a high carbon economy to a low carbon and renewable energy economies as well as new ones altogether. There is going to be contestation between

capitalists and coalition of labour movement and civil society about the role of the state in the new energy regime.

However, the gap that exists is that the literature does not identify the role to be played by the labour movement in South Africa in the course of mitigation and adaptation. Indeed the labour movement in this case SATAWU has a difficult task to ensure that the shift to a low carbon economy does not result into serious job losses as it occurred in the British transport reform.

CHAPTER 4
THE LABOUR PERSPECTIVE ON CLIMATE CHANGE

4.1 Introduction

This chapter demonstrates that the labour movement in South Africa has been slow to engage with environmental issues generally. However it is following the lead of the international labour movement, in particular the ITUC, in beginning to address climate change. The chapter discusses several recent events which propelled the engagement of the labour movement (particularly COSATU), the July 2011 conference held in Durban which formulated a draft policy framework, the government green paper on climate change and the Global Day of Action at COP 17.

4.2 SATAWU Background

SATAWU was formed in 1998 as a product of the merger of three affiliates of COSATU which were organising in the transport sector (SATAWU 2011). Currently it has a total paid-up membership of 165 000 from cleaning services, security companies and transportation (SATAWU 2011). The transport industry membership is 48.6% of the general membership. The transport industry in SATAWU is divided into six main sectors which are: aviation, freight rail, marine time, passenger rail, road freight and road passenger. The focus of this research was mainly on the transport industry as a growing source of GHG.

SATAWU is an affiliate of COSATU which is the largest trade union federation in South Africa representing over two million members (COSATU 2011). SATAWU is the fifth largest paid-up membership union in COSATU. The SATAWU officials and office bearers are members of COSATU structures such as the CEC and subcommittees. As such they are able to influence policies, lobby and advocate for their interest in the transport industry. Internationally SATAWU is an affiliate of the International Transport Workers' Federation (ITF) and the Union Network International (UNI). The federations inform the SATAWU policies and campaigns, then SATAWU localise them into South African context.

4.3 Trade unions and climate change

Historically South African trade unions had for years ignored environmental issues and focused mostly on bread and butter issues (job security and wages). However, COSATU took a different route at its 10th national congress of 2009 when it adopted a resolution on climate change. The congress identified climate change as one of the paramount threats to the existence of mankind. COSATU realized that the consequences of climate change will be mostly felt by the working class, the poor and the developing countries, as a result the congress resolved to take precautionary measures to prevent neoliberal ideas from exploiting the canvassed green jobs in the responses as a gray area for accumulation (COSATU 2011).

One of the measures that COSATU took to implement its congress resolution was to resuscitate its alliance with mass democratic movements in the communities, as a result it organised civil society conference on October 27-28, 2010 in Boksburg. The conference successfully brought together the total of 300 delegates from different civil society organizations (COSATU 2011). The conference issued a declaration to organise a massive democratic programme to pressurize the government from the municipalities to the central government to deliver services entrenched by the constitution and existing laws as rights to the ordinary people at the grassroots.

The declaration demanded that the government should be devoted towards "green economy" and sustainable development strategic approaches: transforming from the coal driven energy supply to a low carbon or "carbon free economy", develop eco-agriculture, green jobs, and a rejection of nuclear power (COSATU 2011). The civil societies reiterated that they have to be in control of the process of shifting the country to renewable energy sector in favour of "zero-waste jobs".

COSATU takes cognizance of the fact the 25% of the South African citizens need access to electricity then there should be concerted efforts to take care for the environment at the same time providing them with their basic energy rights required by the constitution (COSATU 2011). COSATU suggested that petrol levy can be used to fund renewable energy electricity generating projects for the inhabitants who have no access to electricity. COSATU listed a number of measures it finds viable for carbon emission mitigation in the economy and sustainable development:

> "…a moratorium on building more coal-fired plants after Medupi, provision of solar water heater in poor households, make energy efficiency in RDP houses compulsory, the provision of clean public transport and the creation of decent green jobs in a transmission to low carbon economy" (Gumede 2011: 63).

Over and above these suggestions, COSATU has developed its own environmental 'check-list" to ensure that its staff, affiliates and individual members take responsibility in the fight against climate change. These includes: office activities, conferencing, transportation and awareness campaigns.

4.4 The Green paper and the labour responses

The National Climate Change Response Green Paper (green paper) was issued by the minister of environment on November 25, 2010 (South Africa 2010). It depicts the treasure of natural minerals, fossil fuels and renewable resources of South Africa to the multiracial society of South Africa as a symbol of diversity. Though it has those riches it has problems which are natural and systematic. It is water scares and faces high unemployment and inequality resulting from apartheid; it is a developing country that needs to grow. It is both vulnerable to climate change and amongst major polluters.

The green paper aligns its self with the IPCC report that attributes anthropogenic activities as responsible for global increases in temperatures. The South African government realizes the need to stabilize the level of GHG concentration in the atmosphere through a legally binding agreement. South African government undertakes to reduce its emissions and prepare for future catastrophes of climate change. The green paper suggests that the temperature rise should not exceeded two degrees Celsius (2^0C) because the increase beyond that would result in complete change of life; aridity, human survival and the ecosystem.

The green paper embraced environmental principles like precautionary, polluter pays, people-centred approach and informed participation. They respectively mean that there should be precautions taken about risks to continue GHG emissions; those causing emissions should be held liable for their acts to deter them; strategies applied in the mitigation and adaptation should consider most vulnerable groups in the society and lastly, information on climate change based on science should be accessible to facilitate communities' participation.

The green paper targeted the reduction of South Africa emissions at 35% between the years 2020 to 2025 and 42% by 2036 (South Africa 2010). It identifies agriculture, human health and water as needing medium term adaptation while sectors marked for mitigation are energy, industry and transportation. Transportation mitigation benefits were said to be improved air quality, reduction of road accidents and reduction of time between trips. However, it was noted as that transportation is a growing sector because of the demand for movement of people and goods around the country.

SATAWU developed its own organizational critique of the green paper; specifically it stated that it lacks urgency. SATAWU provided statistical data about effects of climate change

which were not given by the green paper; there are 150 million climate migrants as a result of droughts and floods, 262 million people are affected by natural disasters and 300 000 malaria deaths (SATAWU 2011).

SATAWU (2011) challenged the target of 2 degrees increase in temperature put in the green paper as leading to disaster. SATAWU points out that the IPCC has cautioned that 2 degrees increase would lead to severe drought affecting a billion people, damage of forests ecosystem, increased malaria threats to 40 million and ten million affected by sea level rise (SATAWU 2011).

COSATU opposed market based carbon emission policy in responding to climate change; it argued that market based solutions gives priority to capital rather than humanity wellbeing. The COSATU response paper advocated considerable shift in the existing consumption trends, where the few 'haves' consume more than the majority of the 'have-nots'. It emphasised that reference given on the vulnerability of the 'have-nots' is not properly captured in the adaptation programme of regulation and funding or alternatively in the current economic policy of the New Growth Path (NGP). COSATU has warned the government of the attitude of 'business as usual' by polluters under the misconception that taxation would impair the economy or competitiveness of coal exports in the world market but should be taxed to source funding for the immediate needs of the vulnerable communities and uphold the principle of polluter pays.

COSATU criticised the green paper people centred approach strategy as vague, as it did not emphasised economic sustainability of the country. In this regard economic growth should

include job creation, low carbon emissions, proper waste management and access to resources and basic services by the poor.

The green paper left much to be desired in terms of employment opportunities hence COSATU suggested that local government should be included in the localisation of renewable electricity generation and installation of solar water heaters for decent and quality job creation through public assets. In addition COSATU warned that there was a need to be proactive in job creation so that when certain industries are phased out due to mitigation operational requirements, workers would not be retrenched but would automatically find an alternative employment in the 'green economy'. There was expression of urgency on availability of data on which jobs are high carbon emitters and alternative jobs to be created and tabled before the National Economic and Development and Labour Council (NEDLAC) and Sector Education and Training Authority (SETA) negotiations and rolling out of mitigation and adaptation schemes. These projects should create decent permanent jobs not comparable in any manner to the Expanded Public Works Programmes (EPWP).

COSATU underscored that the green paper did not give the transport industry a clearly articulated section yet it is the second largest polluter in the South African economy. In the transport industry road transport seems to be the most polluting as it stands at 74%, which are mostly private cars, in the entire industry; it is followed by aviation at 12%, shipping ten percent and lastly rail constitutes two percent (COSATU 2011). COSATU considered that passenger transport should be treated separately from freight transport. Public passenger transport run by municipality need to be subsidised, increased to carry many people, improved on carbon emissions and proper route networks be developed against the legacy of apartheid which made the smooth highways for the rich. COSATU suggested that the green

paper should include the Bus Rapid Transport (BRT) system (Rea vaya buses) in the proposal since it was canvased as an alternative to monorails.

The proposed swing from road freight to rail needs to be unpacked further considering expenditure on the project, and the effects and the duration of the transformation process. The rail system currently has old trains which are energy intensive as they depend on both electricity and diesel fuel, hence the need to explore renewable energy. There is need for further research to cover improvement of rail way systems with regards to energy supply, integration of goods delivery from the farms and industries to the market. The response suggested that maritime should be promoted as another ecologically friendly mode of transport. Lastly, the department of transport was challenged to show up its readiness to the process and bring up additional modification to be made different transport modes.

4.5 The International Trade Union Movement

In its 42nd congress held in Mexico City from August 2-12, 2010 the ITF noted that climate has taken the central stage in the international politics. The failure of the COP 15 to devise a binding regulatory mechanism caused civil society organisations and labour movements to urge member states to move towards low carbon emissions and renewable technology production. Though the working class finds itself on the edge of climate change crisis, it has not caused this situation. The labour movement role is to monitor and ensure that transition to low carbon economy creates more decent green jobs (ITF 2010).

The congress indicated its determination to advocate sustainable development policies instead of free market policies such as carbon trading. The ITF believes strongly that sustainable transport services can simultaneously secure jobs and achieve social justice. The ITF realizes

the urgent need for expanding transport industry to reduce its emissions level to protect the natural environment and ensure social sustainability without harming the workers (ITF 2010).

The ITF concurs with the scientific explanation that, to bring stability to the current ecological disruption the emissions should be reduced to ensure no further rise beyond two degrees Celsius (2^0C); hence it proposes a "Reduce-Shift-Improve" framework. This strategy emphasises finding a low carbon emissions transportation for goods and people, reducing cheap labour in the industry and shifting towards developed public transport; reduce refers to improvement of current technology to that which is ecologically friendly and improve participation of the labour movement (ITF 2010).

The International Trade Union Confederation (ITUC) has been participating at global climate change fora. It is through it that national labour centres and sectorial world federations are able to participate in the COP meetings as stakeholders. The ITUC role has been to make discussion documents among affiliates and comments on the decisions of the UNFCCC.

In 2010 the ITUC made a plea to the UNFCCC about its expectation on the Cancun COP16 after the collapse of the Copenhagen COP 15 climate change summit. The ITUC called for a just transition to a low carbon emissions economy which guarantees workers decent quality jobs, providing social protection and enhance social resilience of the communities. The ITUC (2010) subscribes to changing the capitalist ways of production and consumption to a sustainable development path and creative renewable technology. The new jobs that would be created in the shift process would serve both as service provision to the communities and sustainable economic growth. The ITUC considers social protection as adaptation strategy

which requires participation of all stakeholders, the labour movement and civil society at all levels international, regional and national to attain resilience in the communities.

In its cooperation with South African trade unions, mainly COSATU, the ITUC hosted a climate change workshop in Durban in which all other trade union federations (Federation of Unions of South Africa [FEDUSA] and National Council of Trade Unions [NACTWU]) participated to facilitate labour movement involvement ahead of COP 17. The workshop discussed capitalist neoliberal responses to climate change and unpacked its failures to resolve the crisis. Market solutions were blamed for putting capital before the people. The proposal was that there should be a transition to a socialist economy, as the expansionist logic of capitalism is the main cause of climate change.

The Durban workshop expressed concern over the fact that effects of climate change are being felt in Durban by the cold, windy and rainy weather and drought in Somalia. The situation in Somalia was sighted as a practical example how the poor are affected by climate change. An appeal was made to the American government to think broadly of the consequences of climate change than its narrow economic interests in the negotiations.

Different unions made presentations on their initiatives to respond to climate change, for instance FEDUSA and some of COSATU unions showed that they have developed paperless offices by communicating through emails and recycling paper. Some of the responses were developing campaigns on behavioural change of members in the workplace in the use of

electricity and in the communities. If these small initiatives can be combined across the world then a trend can be felt in the production of paper and generation of electricity.

The transport sector made presentation on the fact that it was a major contributor to GHG emissions in the world by 13.1% (Barrett 2010; ITUC 2011). This was broken down in the following manner: aviation - 12%, road - 74% (mostly private cars), shipping - 10%, rail - 2%. Potential risks to jobs were not only in the transport sector but would affect other related sectors to which transportation is provided, transportation delays or cancellations might affect motor manufacturers, retail and tourism. The probability is high that job losses would occur in road freight (trucking) shifting to freight rail and taxi industry shift to bus and passenger rail. Foreseeable job-creation is in the shift to electric engines, expansion of railways and shipping, improvement of public transport system to be affordable and efficient.

On the part of green decent jobs the labour movement demanded local manufacturing of solar panels, solar geysers, wind turbines and exploring renewable energy production as a labour intensive employment. Also, parastatals and community co-operatives should be used in manufacturing. An emphasis was that there must be no race to bottom in the new jobs since they should comply with the ILO standards of decent work. It was expressed that leaving job creation in the hands of the private sector would turn against workers in terms of exploitation and facilitate green capitalism which is based on technological innovation and market expansion (Cock 2011). The proposed job creation initiatives were to be central to the one million climate jobs campaign.

The workshop discussed a coordinated labour strategy for a just transition to a low carbon economy for the COP 17 negotiations and beyond (ITUC 2011). To achieve this task in different sectors trade unions agreed that their roles were backing policy development within the federations and affiliates, conducting campaigns pressurising the government to make necessary interventions, conducting education programmes, mass mobilization, capacity building towards developing an appropriate fighting programme of action against the employers and government, forging links with civil society to tackle community issues such as provision of clean drinking water, the provision of electricity and leading the economic growth path.

The ITUC is adamant that its lobbying and advocacy for a low carbon economy would not end as it would be taken to workers in each country, to the G20 summit and the Rio+20 Earth Summit. Sharan Burrow said "we have been vocal in calling for a just transition where workers are involved and shape the social and economic transformation to tackle climate change. Now our voice will only get louder as the urgency for government action becomes greater" (ITUC 2011: website).

4.6 The Global Day of Action

Forces of the working class and masses from different communities in South Africa, Africa and other parts of the world were rallied in Durban to put their demands to the COP 17 summit on December 3, 2011, the global day of action. The march of 12 000 people on the global day of action was organised by a body called C17 which was composed of representatives from the labour movement, environmental organisations, social movements and the media (Cock 2012). The intention of the demonstration was to demand the legally

binding agreement from the COP17 negotiations; to demand the extension of the Kyoto Protocol first commitment period. There were other demands that complemented the main ones which were made by different groups and individual members of the society written on different communication material such as banners, stickers and apparel.

Demonstrations are used by organisations during world summits because it is a platform which ordinary people who do not have any stake in the negotiations make their presence be felt. Climate change negotiations are lengthened because countries put their economic growth first hence they take their time depending on development of technology which would substitute the current one. Green Economy 20 (GE20) believes that the climate change responses should be given the next ten years to develop until 2020 to allow for coalition of business, financial institutions and governments (Tulleken 2011).



Photo 4.1 by Hlalele 2011: Shows demonstration commences in Durban.

At the launch of the million climate jobs campaign a minimum of one million climate jobs were demanded from the governments of South Africa to provide a twofold solution to the civilization crisis of climate change and to tackle the unemployment crisis (One Million Climate Jobs 2011). The coalition believes that mobilization of the masses is the only way the government can hear the call to provide those climate jobs by energy generation from wind, solar and other ecologically friendly initiatives. The campaign include a just transition to a low carbon economy where workers in the "brown economy" (high carbon economy) cannot

lose employment but should be re-skilled to fit in the new employment opportunities created. The coalition of labour and civil societies strongly believed that it was easier to ensure that workers cannot lose their jobs if the climate jobs are in the hands of the state than with the capitalists.



Photo4.2 by Hlalele 2011: *shows Greenpeace members with their banners displaying their demands in Durban.*

In conclusion, this global day of action was not the first of its kind during COP 17 but there had been others during past climate change negotiations. The Durban platform of action which delays action on climate change until 2020 has been described as "a crime against humanity" (Climate Justice Network 2011).

CHAPTER 5

SATAWU AND CLIMATE CHANGE

5.1 Introduction

This chapter analyses the findings from data collected from in-depth interviews with 16 key informants. The main finding is that SATAWU members have a very limited understanding of the issue of climate change. These limited understanding included the definition of climate change, its causes, social effects, the possibility of alternative employment, the contribution of the transport sector to climate change and what trade union response would be appropriate.

The interviews were conducted with twelve SATAWU shop stewards and two officials from SATAWU who were the road passenger coordinator (RPC) and the national campaigns coordinator (NCC). In addition, were an informant from the COSATU SPU and another official from PRASA. The other data was collected from participant observation in the COSATU and the SATAWU workshops on climate change. All the SATAWU shop stewards were answering the same questions but officials had specific questions relating to their official capacity. The chapter has followed the framework of the interview guide since they were designed to development of the argument.

SATAWU hosted its own climate change workshop in Durban in August 2011 following the COSATU Central Executive Committee (CEC) resolution that affiliates should educate their members and mobilise them around climate change, especially the one million climate jobs campaign. The workshop was the first initiative of SATAWU to educate officials at national and provincial levels including shop stewards about climate change as well as mobilizing for the one million climate jobs campaign ahead of COP 17 and beyond.

Many SATAWU shop stewards who were interviewed seemed to draw their limited information from different sources such as radios, televisions and newspapers where different climate change issues were reported and debated. Only two of them had attended the SATAWU workshop.

5.2 Defining climate change

SATAWU informants showed a very limited understanding of climate change. Their answers reflected scattered insights rather than any systematic grasp of the issue.

No single informant was able to define climate change coherently. Some were conscious of the scale involved. A passenger bus shop steward, Mkulu understood the scale of climate change and the function that can be performed by trees in the planet. He said "it is something that needs us to take care of, mainly the planting of trees to look after nature, to avoid climate change getting momentum as trees clean the air we inhale. The heat will affect people's lives which will shorten. Climate change will affect all living things and human beings."

Moholoane from the taxi sector said he was not well informed with the climate change issue but he often hears about it from the radios and television reports. He said "I see tsunamis happening in Japan, volcanic eruptions, storms and this hurricane happening in America." He believed they were caused by climate change.

Tsietsi from the passenger rail referred to changing weather patterns as indicative of climate change. He said "climate does no longer happen the way it used to be in the past. For instance if it was autumn, summer or winter the things we know no longer happen according to the times. If it's the rainy season there is no rain."

The SATAWU RPC said climate change is associated with lots of carbon emissions from the transport industry made by planes, buses, taxis and private motor cars in the course of using oil and petrol.

Several informants stressed that the trade union faced more important issues than climate change. For example one of the informants was more concerned about competition in the transport industry, than with climate change. Moetellipele said "I understand the challenges to be quite huge! There is too much competition in the transport industry; there are other new forms of transport such as Gautrain and Rea Vaya. They pose new challenges to the taxi industry and metro rail about the effectiveness of the modes of transport, affordability and safety for all."

Another informant focused on Zimbabwean immigrants into South Africa. Nthabiseng said "South Africa is not like before when I started working in the taxi industry. There is an influx of foreigners into the country. I understand that they are people running away from their countries because of violence."

Out of twelve workers asked about their understanding on climate change only two respondents were completely ignorant. Of these two one understood climate change as change in the larger economy while the other took it as changes in the work environment caused by migration, largely of the Zimbabweans into South Africa. Among the ten respondents who showed some understanding about the issue only two had attended the SATAWU climate change workshop which was held in Durban, the rest of the respondents gave responses based on their general knowledge. Other two responses were given by the SATAWU officials who had the chance to learn about the issue in their official capacity in meetings and workshops.

5.3 Causes of climate change

A variety of factors which were listed to be causing climate change included: carbon emissions, weather conditions and new technologies. The SATAWU members and officials explanations on the causes of climate change drew from a range of sources including indigenous knowledge, religious beliefs, current affairs and trade union training. More than one explanation was provided by one person.

The SATAWU RPC said climate change was caused by air polluted by carbon emissions. He said the air affects the environment that people live in and results in changed seasons and droughts. The COSATU SPU said climate change is caused by GHG that go to the atmosphere and create a layer. He explained the GHG to be composed of carbon dioxide, hydrogen and other gases produced by human activities. He said the major source of this GHG is industrialisation by developed countries. These officials had been handling this subject for a long period in their official capacities.

Other informants said climate change was caused by a specific form of industrialisation, namely the expansionist logic of the capitalist system. For example, the SATAWU NCC said "climate change is one of the challenges reflecting the crisis of capitalism. Its solution is possible with the abolition of capitalism by socialism and then communism."

Cele a shop steward from the road freight sector who had attended the SATAWU workshop showed what he had learned as he said climate change was caused by massive production of GHG including carbon dioxide by the transport sector where trains and trucks were used and in the generation of electrical energy from coal.

Mkhize who is a freight train driver said he understood climate change to be caused by a lot of factors like air pollution, he said "I remember the talk about changing of petrol from red one to the green one, they tried to minimise that kind of pollution which is affecting our environment and

that brings a lot of heat on earth." This shop steward had attended the SATAWU workshop however instead of reproducing the recent information from this workshop he chose to reflect his previous knowledge.

Asked what causes climate change Mookameli, a junior shop steward in the taxi sector said "It is caused by the smoke more particularly the gases from vehicles, there are vehicles which pollute a lot and they are responsible for climate change."

Industrialization and development were frequently mentioned as causing climate change. It was claimed that for example mining and industries are good for developing countries but at the same time they are polluting in the course of their production.

Other informants focused on new technologies. For example, Pheni, a shop steward in the freight rail indicated that new technologies in highly industrialised countries were responsible for several modern catastrophes which are currently happening in the world, for instance Japan nuclear crisis. He said, "as you can see all these hurricanes and tsunamis in most of the countries affected are highly developed. They are researching day in day out. They are trying new things altogether. You can see countries like Japan where there is hurricane, tsunami or something of some sort. And these are highly industrialised countries so industrial development can be causing climate change."

Mookameli pointed out that evolution of the natural annual cycle of the weather causes alterations to occur. His explanation was derived from a Sesotho proverb which can be literally translated by "years bewitch each other!"

Pheni, from the freight rail sector gave a contradictory description containing both biblical and scientific approach when he said "if I am too religious I can say God changes climate, I can rather say, scientific researches cause climate change." This biblical explanation of climate change surfaced in the SATAWU workshop held in Durban. It was asserted that the bible indicated that the time will come when natural disasters would occur so "isn't it a waste of time to be discussing how to

reduce emissions because climate change is inevitable?" The counter argument from another shop steward was that people should not base their argument on idealist thinking but rather on a materialistic approach because a trade union is not a church working on religious issues. A trade union works on existing facts and evidence. This debate was resolved by one of the facilitators at the workshop announcing that COSATU resolved to work on climate change explanations based on science.

The facilitator pointed out that the scientific explanation for the cause of climate change showed that industrial production, transportation, industrial agriculture, land filling, generation of electricity from coal, burning fossil fuels and many more releases GHG, which is largely carbon, into the atmosphere. These cause the globe to warm and increases normal temperatures which result in extreme weather events like: drought which result in food insecurity hence increase food prices, floods, rising sea levels, storms, excessive snow and spread of epidemic diseases like malaria into new areas.

5.4 The contribution of different transport sectors to climate change

All members of SATAWU unanimously agreed that their companies were contributing to climate change. The reasons they provided in supporting their claims differed depending on their sectors.

Workers from the freight rail sector agreed that their company has diesel locomotives which produce exhaust gases when they are moving up and down delivering goods. Besides delivery the other cause was believed to be spillage of chemicals and reactive compounds such as cement as result of derailment.

A shop steward from the road freight sector also indicated that their transport and delivery of goods cause it to contribute to air pollution by its vehicles. A female shop steward from the same sector said "our cars deliver goods using fuel (petrol/diesel) when they are on the road, which means air pollution."

The shop stewards from the taxi sector also agreed that their companies contributed to causing climate change because the taxis produce carbon dioxide. One went further to say, "in Johannesburg there are many cars nowadays which were not there previously, so they are all producing exhaust gases as they move. These gases combine together in the atmosphere hence they cause climate change." Another shop steward said "in the taxi industry there are taxis which are not road worthy, they emit a lot of smoke which cause climate change because their owners don't repair them." Taxi drivers always talk about the types of exhaust gases produced by the taxis.

Respondents from passenger rail including both a shop steward and a company official (on behalf of PRASA) indicated that their company does not pollute the atmosphere directly because its rolling stock uses electricity generated by Eskom. However the company official mentioned that the electricity was generated from coal which produces GHG. She further indicated that even though the company uses diesel-electric trains in the Eastern Cape they do not belong to them; they are leased from another service provider. In general, passenger rail contributes to the demand of electricity generated from coal.

5.5 The effects of climate change

Generally the informants showed a deep ignorance of the impact climate change will have on the working class in the form of rising food prices and water shortage. Most informants only mentioned the direct impact on weather patterns.

Only one informant referred to food security. This was the COSATU SPU who said climate change "will have great impact on any country that is vulnerable, for example human health and food security: if farmers cannot produce enough food this will lead to increase in food prices. It will also impact on water; South Africa is a water scare country so it will also have impact on water supply."

Cele pointed out that "as we are part of the world, what we see happening in other countries like America, where there are tornados. Even here in Durban in 2008, we saw floods and rising sea levels so climate change is a threat to everyone in the world as South Africa is part of the world!"

Mkize from the freight rail sector said "this year (2011) it is history that I saw snow falling twice in the space of two weeks. You can also see in summer how it is so hot, we can see it is also affecting crops generally. We are living on maize meal and other stuff so when there is lot of sun we end up getting dryness and drought. As a result we don't get sufficient white maize meal and when days pass we end up settling for red maize meal, which is not good for our health."

The SATAWU RPC indicated that already there is drought which affects agricultural production. The seasons are abnormal and the heat from the sun is already turning people's skin to dark complexion.

Another shop steward from the passenger bus sector, Mayise said climate change poses huge and terrible impacts on human being and other creatures that depend on water as it is indicated by drying up of places which used to be dams and rivers. A veteran shop steward from the bus company pointed that human beings will have a shortened life span because of climate change. However he could not go into details on this.

Moholoane predicted that "very soon there might be storms in South Africa, though we are too much inland but I can foresee them coming as well as drought coming. In South Africa we are going to have Sahara Desert hundred years to come because there will be no plants to grow!"

Though most of the workers understood climate change to mean extreme weather events, they could not differentiate climate change consequences from other ecological and health effects caused by vehicles such as water pollution and air pollution.

Pheni said, "if water is polluted as a human being who uses water already I'm affected, if air is polluted as a human being who breathes that air I'm affected. There will be outbreak of diseases if water and air are polluted."

Mpumi said, "I will be affected as a result of inhaling the exhaust fumes!"

Nthabiseng complained of ill health which was not even related to GHG emissions "I'm having flue now, passengers infect us!"

Though motor vehicles produce exhaust gases containing carbon dioxide and other gases which result in climate change, when workers inhale the exhaust fumes they affect their health resulting in respiratory diseases or illness. Oil leakages and fuels from vehicles and trains pollute the water and the environment but do not cause climate change.

Other effects that were mentioned were; "if there is drought where will we plough? If there are thunder storms there is going to be many casualties and deaths! If there are no plants how are animals going to survive so that we can have them for consumption?" Moholoane exclaimed. Cele pointed out that the infrastructure like houses will be destroyed by floods as a result of climate change.

Mookameli indicated that people living in informal settlements are vulnerable "people will be sick from numerous modern diseases that are always mentioned though I don't know their names. I live with these people in the township, so they will infect me as we interact." He went further to reflect on his personal problem, in that his health own will be affected if cold temperatures were to prevail for a longer period than normal.

Eric replied "I will be affected because I am part of the society. If there is food shortage I will starve!"

5.6 SATAWU shop stewards understanding of the response of companies in the transport sector

The majority of the workers asked whether their employers had started any shift to a low carbon economy, indicated that there were no climate change oriented policies in their workplace. Two workers indicated that some employers have started to respond by reducing emissions and shifting to low carbon modes of transport. The sectors indicated were road

freight and taxi.

A junior shop steward from the taxi sector believed that an effort to address climate change indirectly by taxi associations was when they tackled the issues of maintenance of taxis to be in good conditions, as an important step to reduce emissions on the road.

The response of the shop steward from the taxi sector was that the taxi associations' campaign on the better maintenance of vehicles was contributing to reducing emissions this must not be considered as mitigating climate change because they are not carbon efficient. Noting that South African taxi ranks are covered if a taxi causes excessive smoke it would render the entire area health hazard (of respiratory problems and nervous systems of children) for all users, drivers, passengers and owners. Furthermore, a vehicle causing excessive smoke is not cost effective in fuel and oil utilization. It is concluded that taxi associations were not responding to climate change as these carbon emissions pose serious health hazards.

The road freight employee concluded that: "In as much as they did not say anything but we see they are changing certain systems. In my company, we use Hysters (fork lift machines). Before we used fork lifts which used diesel, they produced a lot of carbon dioxide. But recently we use battery Hysters which I think are positive in terms of dealing with climate change. However, they were not bought to address climate change because they were not following a clear programme but one way or another they reduce emissions."

The COSATU SPU said he was aware of employers' discussions of shifting to a low carbon economy in National Economic Development for Labour and Council (NEDLAC). The SATAWU road passenger sector coordinator indicated that climate change is a new issue so employers have not started considering it in the transport sector.

5.7 Emission codes

There was no agreement amongst the SATAWU members and officials as well the PRASA official about whether there are regulations of exhaust fumes from vehicles or locomotives in the transport industry. Only one member said there were emission codes for vehicles in her company. Ten others said there were no emission codes guiding drivers and motor or train mechanics in their companies. Three people said they did not know.

Mookameli said "there is no law; I strongly believe a vehicle causes a cloud of exhaust gases because it has problems, what is important is that taxi owners should repair their cars so that they don't blow a cloud of smoke!"

Cele said "no, there is no policy or document guiding us."

Mkhize said "actually there is nothing so far, but with new locomotives which came last year, I think they came with the reduction of some smoke. They are much better than those old ones."

Mayise said "no, when we attend refresher courses we are told what kind of things to look for on a bus, like a certain type of smoke, we must report. That is for mechanical part only."

The SATAWU RPC said "during the taxi recapitalization, the government gazetted specifications for commuter transport; I hope that included emissions because it specified the type of engine. I suspect that had to do with carbon reduction. I cannot authenticate that but you can read that in the Act."

The SATAWU NCC said "I wouldn't know clearly!"

The comments suggest that exhaust emissions are not well regulated. This implies that these exhaust emissions are not taken seriously by the state and the Ministry of Transport yet they contribute to climate change and are environmental health hazards to the people and the environment around them. This includes people in the metro or cities, taxi or bus stations and in the communities.

5.8 Reducing emissions

A junior taxi shop steward did not only look at the transport industry but considered the society in general when he said, "there should be awareness campaigns that provide people with knowledge because people do certain things because they don't know! Some people burn tyres and other old items, like clothes instead of putting them into the dust bins." Referring to vehicles he said "motor vehicle manufacturers should make cars which operate with battery or solar. If a car uses solar energy it will not emit exhaust gases because it will be using the sun's energy."

A senior taxi shop steward said "I think we must move away from these fuels (diesel and petrol) and introduce cars which use electricity from a battery which can be recharged!"

The veteran passenger bus shop steward proposed "may be if the electricity from the battery can be used to propel the engine because these petrol and diesel are the ones causing these fumes!"

A senior passenger rail shop steward suggested that "producing electrical system cars which can be charged or develop engines that uses both gas and petrol."

A junior rail freight shop steward said "I read about new gas vehicles, so if we switch from diesel or petrol to gas then we can reduce pollution. We can also use electrical motor cars, although the electricity is produced from coal but we can use hydropower electricity." He went further to say it was problematic in the rural areas because people were still using firewood and coal to cook. He could not see any solution because those people did not have an alternative source of energy. Mega

hydropower dam projects are contested as an alternative green solution because they are constructed using a lot of cement which causes emissions and produce a lot of methane from decomposing plants covered by water as well of social problems caused by displacement of people.

A senior rail freight shop steward said "by reducing locomotives using diesel. The company should improve safety measures so that spillage of chemicals causing emissions to the atmosphere, polluting water and the environment at large is minimised."

A junior passenger rail shop steward thought that "industries should be isolated from people where the smoke and chemicals can be controlled be it extractors, fans or whatever, so that when they are emitted they go to a certain direction and not affect our welfare."

A freight rail driver pointed to the ability of trees to use carbon dioxide and give out oxygen he said "I think by planting more trees." He could not suggest any solution relating to transport.

Some passenger and freight rail shop stewards suggested the contested energy source from compress gas fuel which is used in Thailand as low carbon energy mitigation for climate change. Utilising the car battery as the only source of power is under test by several motor manufactures.

In the SATAWU climate change training workshop a suggestion was made that emissions could be reduced by consuming locally manufactured products which can reduce transportation and reducing the use of electricity especially when it was not necessary. Forms of reducing electricity that were mentioned included using light saving bulbs, switching off the lights where the sun's light can be used, switching off office equipment when it is not in operation and doing away with night shifts. The suggestion of night shifts caused an uproar from officials who said that it would result in workers being retrenched because employers

would increase the work load of day workers and incorporate a few from the night shift and then dismiss the rest to maximise their profits.

5.9 Job losses

Job losses are likely in the transition to a low carbon economy. Currently the SATAWU shop stewards and officials are divided over the question of future job losses, though some were acutely aware of the risks involved. Generally, the shop stewards were ignorant about the potential job losses that will be posed by climate change they focused on environmental health issues caused by GHG emissions and general livelihoods impacts.

Only one respondent was able to draw a link between climate change and employment whereby jobs would be threatened. Mkize pointed out that climate change will result in shutting down of companies and as a result jobs would be lost.

All sixteen participants, shop stewards and officials were asked whether reducing emissions would lead to job losses. Those who agreed that jobs would be lost were half of the sample while the other half consisted of six informants denying any possible job losses, the other two differed, one was uncertain of the effects while the other indicated that everything would break down.

Mpumi could foresee potential job losses for trained personnel in some operations. She said "yes, if cars which are polluting by diesel fuel are removed from the public road, then those people who have qualified in driving and their maintenance will have no jobs. The companies producing liquefied gas can close down affecting workers jobs."

Cele agreed and cited proposed shift by the labour movement and civil society by saying "you see this is a threat to us as the working class or as a trade union. It might cause certain job loses. For example if we eliminate the taxi sector and prefer passenger rail that will reduce vehicles producing carbon emissions but

we might create better decent jobs than current taxi sector jobs. But that need the government to develop infrastructure that the trains roll on!"

Mayise said "yes, anything that has to do with technology has to do with cutting costs, it is capital intensive not labour intensive. It has to do with getting profits so it will affect jobs in a very big way."

The SATAWU NCC said "definitely! Every industry is under threat. Perhaps, mining is the most threatened due to its negative impact on the environment and therefore people's living conditions, especially food security and health. In transport, the least polluting sector is rail."

The PRASA official said "staff can be affected when we are cutting cost because labour is always affected. But maintenance and green designs need jobs. Green economy can create more jobs than high carbon economy."

Mookameli disagreed and said "that could not be the case. To ensure that a vehicle does not causes excessive smoke is improving the welfare of the people that does not affect any one's job in any way." But when asked about the effect of introducing of Rea Vaya Bus Rapid Transit system (BRT) he said "BRT affected workers enormously, the bus take the capacity of five taxis hence five workers who were supporting their families lost their jobs. These lead to unemployment which gives rise to starvation which results in crime." The respondent was handling two different scenarios the former had to do with maintaining the current system in the taxis sector but ensuring that it is still performing to its standard while the latter is the exact shift. It shows therefore that jobs were lost.

Moholoane disagreed that jobs would be lost he said "no ways! Never! I don't know but I don't think so!" When asked whether Rea Vaya buses have not affected the jobs of taxi drivers. He said "this issue of BRT, the way they had said it was going to operate, it was not going to cause so many job losses because it was to employ workers whom their taxis were affected in the new job opportunities; drivers, security, ticketing, cleaning and servicing workshop. But if you check, it is not a taxi driver who is a security guard or servicing a bus. It made job losses because they renegaded to the promises they made. But if we think thoroughly there won't be job losses." The respondent gave conflicting answer in that he dismisses job losses but says he does not know.

Pheni disagreed that workers would be affected by a just transition to a low carbon economy. He said "I don't think it will affect them. If I'm driving a vehicle which has petrol driven engine and they switch to electricity, I will still be driving that car. We are just switching from one type of vehicle to another." Asked further about whether workers in the road freight will not be affected when long distance goods are shifted to freight rail. He said "there is still need for trucks to carry containers from the industries to the train station, so I don't think it will affect any job!" In the second example the catch is that when distance is reduced one truck will do more trips which mean others would be redundant hence job losses on the side of labour.

Mkulu said "no, they will not because the trouble causing the people to be sick is dealt with." He understood "fumes" (as he called exhaust gases) and climate change to cause people to be sick reducing their life expectancy.

The COSATU SPU emphasized training as a weapon to fight job losses; he said "I think skilling of workers is the most crucial issue. But for those who cannot I'm not sure to say there cannot be any alternative for them." It is indeed possible that people cannot be trained because of their ages and the level of their education. The respondent was limited to think of both situations where retraining cannot occur and employment does not have alternatives because triumphalist promises for green jobs are very sound.

The SATAWU RPC denied any possibility of job losses. He said "there has not been any indication of potential job losses. Currently what is happening is assumptions and predicting so SATAWU has to begin to sensitize its members, to prepare its members and find ways and means of alleviating job losses. If it is likely that the process will affect them there should be some other forms of engagement in ensuring that those workers are shifted to other forms of work." When asked about effects of the BRT in Johannesburg he said "I may not say the BRT created job losses for workers (taxi), there was paradigm shift from taxis to buses. When the BRT was introduced the element of workers was excluded, empowering bus operators (shareholders) forgetting that we have workers in that territory. At this stage I cannot say workers were

affected." This denial is serious when it comes from an official because he has the duty to lead workers in proactive measures that should be taken.

Eric said "I am not sure. If the company introduces low emission trains, those trains will still need to be repaired or maintained." This informant response is more inclined to the camp which dismisses job losses even if he does not want to commit himself.

Tsietsi was unclear about what reducing emissions means as he said "according to the current transport, passengers would not be able to go to work if changes are made on these types of transport."

These responses indicate the complexity of the relation of job losses to reducing emissions. There is clearly a difference between the promise of new jobs and the implementation of such of new jobs. Like it was mentioned by three respondents that the Rea Vaya BRT project had promised new job opportunities for taxi drivers but its implementation was completely different. Two of them agree that taxi drivers were affected because they did not get the other jobs besides driving as the number of buses introduced was not equal to the number of taxis scrapped. It might have not been possible for the respondent who was saying workers were not affected to notice this issue because there was a whole lot of things surrounding the BRT in Johannesburg. For instance taxi associations were divided over this BRT issue.

5.10 Alternative jobs

Definitely, some of the operations in the transport industry will have to close down as mitigation measures to GHG emissions are implemented, resulting in job losses. Respondents suggested list of alternatives for who may be affected like reskilling, entrepreneurship, terminal packages, cooperatives, support from Unemployment Insurance Fund (UIF) and the Mutual Utilise Project (MUP) pool (group of trained employees).

This project was the only one which showed the power of collective bargaining agreement which should be made by trade unions. The informant said "history is the best teacher, in the past we created a pool (MUP Pool) where we said any one who will be affected would be employed first when a new post comes. And people were trained on jobs that need skills so that after completion they can fill those positions." He went on to say, "It is difficult to envisage because we are saying there must be a shift from another form to another. Let's assume you can't shift all the affected workers from different sectors, perhaps cooperatives must be formed. Engaging in other forms of work creation, to do something completely different thing. If you are a truck drive it doesn't mean that it's the only thing you can do in life. There might be some opportunities that could be created somewhere else."

Other responses were very pessimistic. For example, "well if they have better package they may start their own business in order to survive. As SATAWU we don't create jobs, we depend on the employer."

Other suggestions were:

"Pension packages for the elder workers who cannot be trained any further." This informant could not differentiate between retirement and retrenchment. Pension package is entitled to employees whose termination of employment is based on work age limit. This means there has to be negotiations for those compelled to take early retirement as operational requirement.

"Be transferred to other departments. Should be trained for depots work which does not require greater skill like working with containers, it very easy work."

"I think they should be trained if they are trainable. If illiterate, it could be in entrepreneurship which does not require any level of education to run business, as survival exit strategy."

"What we believe as SATAWU is that those people must be taken for training because they will acquire the skills in other areas where they have to be placed." The respondent was asked how possible training of elderly and illiterate persons is. The response was "it is possible if you are willing to learn certain skills. Illiterate people are good at doing practical work than theoretical and they are very good than people who have gone to school."

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The above responses did not consider the fact that low skilled or unskilled work always has 'a reserve army of the unemployed'. Entrepreneurship has a number of challenges such a completion because of high unemployment rate.

Other responses provided training as an alternative to move from a low paying sector to a high paying sector still in the transport industry. It was stated that "it only depends on the amount of money paid for the work. For instance if they take you to through TETA (Transport Education Training Authority) from code 8 to code 14, they put you to where other sectors can be interested to employ you, when you loses your job." Driving is one of those low skill work which has 'a reserve army of the unemployed'.

Other respondents could not be moved from the position of denying job losses and absence of alternative employment. They said:

"I know there will be reluctance, if workers don't know or they are not clarified through the structures; remember it can't be only workers even the employers should buy into this thing. What I have discovered in the country is; this issue of climate change is still strange thing to the industry (taxi) and we are still going to meet resistance since the government is not putting enough effort in educating the industry and it cannot be them alone but the community in general."

"We have not been in that stage to say there cannot be any alternative until there is scientific research to say this kind of people in this sector don't have any type of work alternative then it is when we must discuss." Reference was made British transport reforms in the 1980s where truck were prevented from entering cities, their movement limited to day time and a shift from road to rail truck drivers were affected because they could not find any alternative employment because their skills were above the available jobs in the depots. He responded "it is an issue which COSATU have not debated in order to say what alternatives are there but the understanding that we are having is that we need a

feeder system on the trains because the train does not go everywhere. The Gautrain which have been launched recently has feeder systems. COSATU have said we must discuss some issues in our own sectors."

5.11 How SATAWU is handling climate change agenda

The slightly over half of the SATAWU shop stewards did not know what the union was doing to address climate change. It was only after SATAWU held its workshop in Durban that members were then introduced to the issue. At this workshop the intention to establish a climate change training programme was announced.

Only three of the twelve informants could say what SATAWU was doing, one of them was a member of the provincial executive committee in Gauteng. He probably knew because representatives from provinces were in attendance and he was interviewed after the SATAWU workshops held in Durban. The other two were those who attended the SATUWU workshop. Two other shop stewards provided political responses to protect the image of the union. They said,

"SATAWU is addressing climate change by talking about it in its structures from the provincial office to the local shop steward council and to the shop steward at the workplace. So far we have said lets plant trees on Arbor Day so that will reduce the heat and pollution."

"We called all workers in the transport industry: truck drivers, taxi drivers, and everybody; we said gentlemen how can we ensure that our reduce emissions from our vehicles? They should be in good working order for the benefit of our lives. We needed people who could assist us on issues of climate change so our campaign was limited to our knowledge."

No official of SATAWU ever mentioned planting trees or maintenance of vehicle as a programme the union was engaged in. Their responses were completely different from those

of these two workers who were trying to paint the good picture of the union to portray it to be doing something with the members whereas it had not commenced any programme.

Other shop stewards did not protect the union they just admitted that the union was not doing anything. This did not come out of ignorance because they were in the leadership of the provincial and local structures which held frequent monthly meetings.

Clearly issues of loyalty to the union were paramount in many informants' minds.

Some comments were:

"It is difficult because the duty of SATAWU is to protect jobs, but also we need to respond to climate and develop strategies. At the moment we have not started but we will do in the near future. This research is an eye opener!"

"I don't know!"

"I am not sure! I think it should approach it from reducing the danger of containers spilling chemicals."

"So far I have not heard anything or read anything or attended any meeting where anything concerning climate change was discussed."

"We have just been elected. I have only heard on the news COSATU our mother body addressing them. Personally I have not heard anything!"

"As a shop steward I don't know!"

"It could be addressed at the ITF where SATAWU is an affiliate, but so far locally we have not discussed."

The shop stewards who attended the SATAWU climate change workshop were fully aware of the union had been doing before the workshop under the COSATU and the ITF where resolutions had been made they had this to say:

"In SATAWU I have never been in a meeting where we had some resolution on climate change. However, we are committed to the policies that were adopted by our federation COSATU earlier this month (August). I think

that will be our approach. We will take part in the campaigns led by COSATU." The respondent understood the link between COSATU and SATAWU much better than with the ITF.

"It is for the first time to be in SATAWU addressing this issue. I think now SATAWU is starting to drive to the right direction by starting with us leaders of the workers, so we will preach the gospel when we go back." The respondent touched on important duty of shop steward of reporting back to the members in the local office, because it is the only way climate change issues can be spread in the union.

The SATAWU officials provided a description why the union had not done anything about climate change; this means shop stewards who said SATAWU had not done anything gave a fair judgment. They said:

"At the moment SATAWU has embarked on a workshop to educate the national sector coordinators and provincial representatives. SATAWU is committed to implement these initiatives at the structural levels: local, provincial and national structures. It will put those structures until the congress where it will be adopting resolutions and strategies." The cohort of leadership that SATAWU was educating in that workshop was very vital for their position in the union as organisation education relies heavily on the structures.

"We are engaged in awareness campaigns among our members, staff and workers in the sectors that we organise. These on-going education campaigns on climate change are about: what it entails, its political economy and necessary solution. So far we have held a workshop in Durban, we are going to hold one in Mpumalanga and we will be part of COP 17, we are part of one million climate jobs campaign, we will launch a booklet as part of our educational and mobilization tool and we are part of the COSATU education and mobilization programme." Indeed this is a fascinating programme that the union is following.

The COSATU SPU indicated a number of activities which the federation was doing which had SATAWU delegates behind all of them he said, "COSATU is still on the learning curve about the matter of climate change agenda. The COSATU is doing its own research in terms of policy development that can be our first response. Secondly we have established a team to work to coordinate our work on climate change. Lastly, we have been participating at international level under the ITUC and tried to influence the ITUC on policy formulation response. And even nationally by responding to the green paper and at NEDLAC."

At the SATAWU climate change workshop held in Durban participants were asked to provide their expectations out of that workshop and there listed so that facilitators would address them. Amongst them were: understanding, impacts on jobs, solutions, gender impacts, the role of the government, campaigns and preparations for the COP17, reducing GHG in the transport industry, how to deal with job creation, translating issues of climate change into collective bargaining and what would be the effect of changing the current mode of transport on climate change?

Some of these expectations were met in the course of the workshop while others were not. Others have been dealt with in other sections of this report for instance understanding, impacts on jobs and reducing GHG in the transport industry. Those that were not met included impacts on gender, dealing with job creation and including climate change issues into collective bargaining. It was quite impossible that all expectations could be met in two days' workshop which was introductory level; some issues like collective bargain would need to be held at sectorial level. Gender issues are cross cutting but to address them the SATAWU would have to incorporate them in its gender programme which would identify soft targets which climate change impacts would attack so that they can be strengthened. Job creation was touched as part of the one million climate change campaign but as to the details of how many jobs per each green project start off it was still a farfetched dream which need further research.

5.12 A just transition to a low carbon economy

A just transition to a low carbon economy cannot be easily attained in the transport industry because at the moment employers have not responded in any manner. Considering that transportation technology is always designed to last for decades poses an enormous challenge

of resistance that would emerge on the side of employers. When employers resist the transition that means SATAWU's responses would be contained in ensuring just transition. Workers have suggested how it can best be done, they said:

Mookameli referred back to the discussion on the BRT as case study pointing out unpleasant consequences that "like I mentioned that one Rea Vaya bus replaces five taxis, SATAWU should ensure that there are other forms of jobs created for people who are displaced. You will find that people who benefited are taxi owners who bought shares but the workers' families suffered."

Pheni strongly believed on acting on informed consent of both officials and members as he said "if they can conduct a research and educate the members so that they can understand what's going up then there can be smooth transition."

Both workers and officials looked up to environmental protection which ensures jobs security, training in new skills, green jobs campaign, collective bargaining negotiations and drawing the government to the stage:

Cele said "it is very hard to secure jobs when dealing with this issue; however we are going to ensure that those workers that will be affected should be trained to fit on the new opportunities and fight for the one million climate jobs that are expected in dealing with climate change."

Moholoane said "SATAWU must look into the matter and ensure that there won't be any retrenchment or job loss. I can't say the environment should be damaged at the expense of jobs but may be there should be other alternatives that will be addressed by the leadership of SATAWU collectively we will see how best can we do it so that workers cannot lose jobs."

Mayise said "SATAWU and other stakeholder should try to sit around the table talk about this even before allowing the transition to happen, find alternatives that will not affect jobs in a very big way because they always know the number of employees that will be affected for that transition. Instead of cutting them off, they can put them on lay off and introduce them to some training in different field that they can explore."

The SATAWU RPC said "SATAWU must hold a thorough workshop on these matters and allow members to make contributions on how their sectors will be affected and how members will assist with dealing with these issues."

The SATAWU NCC could not afford to approach this issue in a simplistic way but put it holistically and shape it philosophically as he said "as a trade union we need to address it from the point of collective bargaining and also by engaging the government in an overtly political way. We can engage the employers and force some changes through collective bargaining effort but also overt political, socio-economic campaigns should be wedged. For example shifting or investing in public transport is something that has to be dealt with politically to mobilize the allies of the working class at large. It's something you can't do through collective bargaining."

The COSATU SPU seemed to have steady approach on how to approach the transition he said "COSATU takes the issue very critical, like any other organisation we need to debate the issue, we need social dialogue, we need social protection, we need issues of shop skilling of workers and we need plans in moving to a just transition."

5.13 Role of shop stewards

Two thirds of the SATAWU shop stewards are not able to draw a line of demarcation between their duties in the union and in the workplace. All the SATAWU shop stewards understood thoroughly what their duties were and they seemed to be all at par on that information. But some failed to draw boundaries of their duties in SATAWU as opposed to their duties at the workplace.

To explore the depth of climate change subject it was contextualise in the shop steward duties in the union and at the workplace; the task was to ask shop stewards what can be their role in handling climate change issues in both settings.

Tsietsi seemed to differentiate the roles for the workplace he said "they should be tackled with the employer up to the highest level." In the union he said "these are the issues that need to be debated and try to find the solution to the problems."

Eric was able to draw the boundaries how these issues are to be held in both settings for the union he said "they should raise it from the structures so that the problem can be addressed." At the workplace he said "discuss with management on what should be done to reduce sources of climate change such as diesel engines and handling containers."

Mpumi dichotomised the responses, for the union she said "the union should advocate for the law that protects workers against climate change and medical funds for check-ups." As for the workplace she said "challenge the management to improve workers' skills so that they won't be affected negatively when climate change policies are implemented and include climate issues in the negotiations."

Cele provided one answer suitable for both he said "it is their basic duty to educate the union members, inform them, and advise them, so they will be playing their central role to make workers aware about this challenge of climate change in meetings. Provide solutions and to mobilize for the campaigns which we as the working class or federation we are going to take fighting this challenge."

Mookameli said "we should teach other shop stewards and members about climate change. Even though I say that I should be trained first so that I can teach others." He went further to say at the workplace "People should be trained like wise and in every company there is a committee of shop steward which if trained they will be able to train everybody in the company."

Pheni laughed before responding and said "those in the know would have to impart knowledge to their fellow colleagues in the union; then preach the gospel in each and every meeting that they address their colleagues." About the workplace he said "normally the shop steward operate within the workplace so you only address those members at the workplace in general meetings and morning indaba (when work schedules and grievances are discussed)."

Mkhize took a personalized perspective he said “we are getting empowered with the knowledge. One should be able to stand up and try to avoid the all those practices that I felt have negative effect as an individual."

Mkulu said “to educate most of the time in the meetings, to talk about climate change so that at the end of the day all the members they represent must know and also have interest in reducing this kind of pollution we are experiencing. The other thing is to seek more information about climate change.”

Moholoane said “they should talk about climate change, conscientize the workers when they are in the meetings then come up with campaigns.” To him these were part of union activities irrespective of whether the activities were done at the workplace or in the communities. He emphasised by saying “campaigns happen in the union towards members in the working environment and then you even go outside; and outside is COSATU then to the society at large.”

The SATAWU NCC was more inclined to shop stewards functions at the workplace “they are leaders in their workplaces and they should be leading again in taking up the challenge of climate change. Of course the theoretical armament which we are doing is important because at the end of the day they are the core to mobilize at the membership at large towards taking mass action.”

In SATAWU the shop stewards have the leeway to debate issues amongst themselves through organisational structures whereas in the workplace its where they implement positions they have developed in the union and it is here where these issues are contested by the employers. So the power of collective bargaining is necessary. Shop steward who failed to distinguish these differences cannot handle climate change issues properly while those who can appreciate the differences could come up strongly through their collective bargaining power.

5.14 Public transport

People who own private cars want transport that is; clean, convenient, efficient, reliable and safe at all times day and night, which the current public transport in South Africa does not provide. The moment these features become available then private car owners would start considering leaving their cars home and use public transport.

The simple majority, of the respondents said it is not possible for private car owners to abandon the cars and jump into public transport currently. They said:

"They don't appreciate them. But to call people to us we must address customer care because it is the one which makes it easy for people to come back. Some of them use their own cars because they we not treated respectful until such time they found that the only solution was to buy one's own car then all troubles would stop."

"At the present moment South Africa is not up to standard. Our public transport is a mess! Is not even possible that we can say people should park their vehicle and use public transport. There is still a long way to go. Not a day can pass without hearing more than 10 or 20 trains being cancelled during peak hour. Almost our members report to work late because of public transport."

"It won't be easy with the fact that the infrastructure of public transport particularly taxis they are not in order. If you are saying people should use trains, trains can't go inside the township and get people to work. Buses also have their special routes that are far away from the people and they should be rescheduled. You would understand that also buses were torched in Dobsonville because passengers were frustrated." He raised a very critical question about who are using public transport and answered that it was the poor people because it is subsidised. He also said public transport is not available at night. He mentioned a number of things which render the taxis sector not efficient like permits of vehicles which affect passengers' journey. Safety assurance to passengers that they would not be affected as there was on-going violence between operators.

Other respondents had negative impression about motorists without actually considering the general problems which they personally know are not proper, one said "most people want to be seen, that I am

having a beautiful car or I don't want to mix with other people in public transport. Public transport is safe and it minimises pollution it will continue to be used but people who have their cars find it difficult to accept it."

Another went in depth to the core of the problems in the taxi industry which make people run away from public transport by stating that "it is not possible, it is a mile stone, and it's a long journey because if you check transport awareness is October month. We make sure that people must use public transport it's not possible the reason being people are complaining about the attitude of drivers towards passengers. You see this industry was informal previously there were no training and people were operating the way they wished. Taxi industry need serious interventions drivers must know that the customers are their bosses. I can say only 40% respect passengers and the rest think passengers need their favour to go to work, though it's not like that. The passenger is the boss, is the king. Without the passengers we cannot survive as an industry."

Some workers expressed sympathy for the private car users on the existing public transport system which is not conducive "I personally feel we are not yet there as far as infrastructure is concerned before people who are using their private cars make that shift. I am sure you can see there are a lot of things hampering even the existing system, we can talk about labour issues, as we speak now we have Rea Vaya which is on strike and for a long time now."

Positive sentiments were expressed for change if several steps were taken to encourage motorists to from their comfort zone to the public space, these were "It won't be easy but it's something which is achievable. You see when you are used to your own car suddenly you have to walk or get into a taxi, is not nice to ride. However if there can be massive investment in buses and trains that are clean, efficient, effective reliable and safe say almost like in Europe, there could be that shift." He went on to mention that the current trains delay workers, the buses time schedules are not user friendly; both the buses and the trains require people to travel for a long distance to find the pickup points which render it not to be safe at night. He compared South African situation with Europe where there is 24 hours bus system which can be good for South Africa but said it can be compromised by crime.

The minority of the participants were courageous that individual car owners could use public transport on certain conditions:

"I think if we had good public transport people will assert. Being stuck in traffic is not a nice thing. We should have good, efficient and safe public transport so that can make people move from their cars to the public transport."

"I don't see any challenge in doing that, but what we need is the commitment from the government by nationalizing the public transport so that it is easy to manage it. The owners of private cars would see that the transport is there affordable and safe, they won't resist."

"It can be possible if the government passes the law, the government must make a law so that everyone should use public transport. And if we find one using one's own car during restricted periods, should get a penalty. It can work in that way."

"Quite possible depending on the efficiency of the mode of transport because it troubles to be in a traffic jam. If people can afford they can go to Gautrain."

The fact that more informants believe private cars owners would resist the use of public transport shows that issues of climate change have not heeded the call. Public transport system had been left to collapse because people have their alternative solution. Regrettably, the number of private cars on the road is increasing this cause construction and expansion of roads for the minority at the expense of the majority. In as much as the introduction of electronic tolls in Gauteng highways could be deterrent to motorist, it was not contextualised in the climate change agenda. It could lead to improvement of public transport than focusing on construction and reduce road accidents.

5.15 Stakeholders

Rolling out a campaign for the use of public transport required assessing the readiness of its stakeholders these are the government transport department, the PRASA, the Transnet, the taxi employers, the bus employers and SATAWU. An over whelming majority of respondents agreed that all stakeholders were not ready for the potential increase of passengers if people were to leave their private cars at their homes and use public transport. Nevertheless, it was surprising that there were shop stewards who despite the obvious situation of dilapidated public transport indicated that the stakeholders were ready.

Moetellipele from the passenger rail listed a number of things currently being revised showing that even the stakeholders were aware of those deficiencies, he said "there is going to be improvement of electricity cut so that there is no cable theft. There is need to improve for more reliable machines (trains), infrastructure and prevent rain from pouring into the coaches. Drivers should reduce speed to prevent accidents. People should not be robbed in the trains. It's even worse in the taxi industry."

Eric highlighted things which were not in good order "roads need maintenance, taxi drivers are not properly trained as they operate from individual attitudes generally there is no quality service."

Mpumi pointed out that "currently roads are being constructed; there are places where there are no buses and trains as well as shortage of taxis." Since she was working in the road freight she opposed shifting from road to rail. She said "it will be expensive and time consuming. There is no road between factories and train station."

The PRASA official did not hesitate to indicate that they were not ready as stakeholders for the challenge that could be posed by the influx of passengers. She stated that this goes back to the history of the rail industry as it was developed to transport people from townships to the industries so there are areas where there are no trains.

Much as Mookameli agreed that stakeholders were not ready for the influx of passenger but he raised a strange argument supporting private cars fearing job losses so consumption should continue to create demand, he said "What should happen to those who are manufacturing those private cars. Who should drive them? If I am a millionaire why should I be in a taxi? I should have the luxury!"

The COSATU SPU response was "We don't have any coordinated public transport system. We need more effort from the government to provide it as it is not doing." A question was asked as to whether the Rea Vaya in Johannesburg and the People Mover in Durban were not the government initiatives. The response was "these are the deals the government is trying to make, but I think it creates problems on its own because Rea Vaya supply only in the city centre and Soweto but we still have lots and lots of cars that are coming from Soweto. What about other areas in Gauteng because it is leading with a population of about 10 million people. It can't be just one thing (Rea Vaya) we need transport which is very integrated. We need a network in terms of public transport; trains, buses and so on!"

Pheni focused more on passenger bus transport by saying "the metro buses are not up to scratch. If you are travelling to Soweto how many PUTCO buses do you see stuck along the road with people trying to hike or foot it."

Cele called for government intervention to provide public transport he said "it should build a parastatal that control road passenger transport just like in rail we have PRASA and aviation we have SAA (South Africa Airways). It must not be certain municipalities it must be nationalised even the taxi sector because this challenges that are on the taxi sector could be managed."

Moholoane pointed at a number of cross cutting issues in the whole transport industry as evidence that the stakeholders were not ready "when look check the infrastructure is not conducive, it tells you that. Just look at the township, in the morning when we are on duty, there are long queues and congestion in *Joburg*. There are other issues of permits, other cars are operating illegally. When the vehicle is suspended and impounded it affects passengers they have to wait for another one."

Tsietsi drew a socio-economic dimension on the part of taxi industry and constrains of passenger rail which shows lack of readiness he said "quantitatively speaking people look at the

limited profit they make daily rather than to serve the people. They have told themselves that we are making so much money, if I am done with it I 'm taking my car to park it. On the other side as metro rail this is only what we can afford. These are the only trains that we have." Asked what makes Metrorail operation differ from Gautrain, he said it was the question of management. The Gautrain was professional and had new trains while the Metrorail management needed to be changed and its rolling stock together with its systems (communication at the stations and inside the train) were old. Asked about the attitude of passenger rail staff, he said "it goes back to the change of management we have as Metrorail. They say give people wrong information then we will cover up. We have had the problem of workers being attacked by passengers angered by the delay of the trains. When you sit down and look at the reasons you find it is just only technical." He concluded by saying the moral of the passenger rail have shifted from positive to negative.

The SATAWU RPC added emphasis to show that the stakeholders were not ready "no, no, they are not ready. There is demand that is above supply of public transport. Just go around in the mornings and look at the queues of people waiting for public transport. Secondly, we have congestion in the morning where such transport get affected, that is where you will see taxi drivers crossing the lines, beating the robot and transgressing the laws to get the people waiting in the queues. Thus why people in Durban were saying we must change the attitude of drivers, it is not. It is the system that is causing that." He suggested that there should be roads designated for taxis like the BRT in Johannesburg, in that way stakeholders would be ready.

The SATAWU NCC elevated the argument of those who expressed unpreparedness of stakeholders he said "I mean you just look when there is a taxi strike lots of people get stranded. Secondly, these buses and taxis do delay so they have their own challenges. By saying there must be effective, efficient, safe and reliable public transport system, that's something we are calling for its not there! At the township people don't have access to bus routes and train routes. If they were to shift what would people in Alex (no buses or train) do? A lot has to be changed apparently! That has to do with apartheid development system." He

went on to elaborate that at the suburbs where there was no access to train route there was access to bus route which he said was limited to timetables.

Asked what SATAWU was doing about the transport month of October he said "we are not doing anything so far. We have not engaged in it any way even in the past years. It's one of our weaknesses. It could have been an opportunity to raise the question of public transport and climate change. It could have been part of the national congress discussions." Asked about preparing members for service quality, he said "you can easily identify the difference between a bus driver and the train driver on the one hand and the taxi driver on the other. The former are better prepared to deal with the public the latter you know they are rude. They treat people like any other commodity, they don't care; they are the ones who would need retraining in public relations or dealing with customers." He said workers in the buses and trains could cope with the influx even when the systems are not ready if they are approached politically.

Asked about whether the workers are not contributing to the dilapidated public transport system, he replied "no, they don't design the systems. They are just tools. The senior managers are unable to run the system efficiently because it's the system which is mean for the poor. And also the conditions they are working under are not conducive, overtime and low remuneration, they are struggling against the system. Their conditions must be improved." He proclaimed the solution to be in the workers governance. He cited the case of European socialist democracies where even members of parliament use public transport.

Mkulu could not come up with a response he said "I am not certain about that because the owners of public transport (the buses and taxis) are just after profits. I believe if stakeholders work collectively it will end up where they are able to meet the demand outside. I believe the government of South Africa is campaigning that people stop using their cars and get to public transport to reduce the congestion on the roads. If we use public transport the accidents we experience can be minimal."

Mkhize declared the public transport stakeholders ready he showed that "there are enough trains, the taxi industry you can see how big it is now and with this lot of new *combies*, Quantums, they are nice and comfortable. Even the buses they are moving fast and they are comfortable."

Readiness of stakeholders is nonstarter as respondents mention a number of things which needs to be addressed. Although climate change agenda is at inertia, SATAWU seems not to be managing its own territory properly. There is consensus that that public transport is a mess, so for SATAWU to let go the month of October dedicated to promote it is a huge mistake on their side, because it can be a platform raising union concerns and as well as empowering their members from different angles. Indeed with the threat of climate change the existing problems in the public transport system would intensify.

5.16 General Recommendations

Some of the recommendations provided here were suggested by the shop stewards to the government and to SATAWU and I totally agreed with them:

- The government needs to capacitate public transport so that it is run in a professional manner.
- Subsidising taxis could reduce accidents because attitudes of drivers would change.
- The question of climate reparations should be taken seriously so that adaptation and mitigation could begin timeously in developing countries.
- SATAWU should take climate change seriously and educate its members.
- COSATU should revisit its campaign against the electronic tolls (e-tolls) so that e-tolls could be contextualised in the climate change agenda in order to reduce GHG from road transport.

5.17 Conclusion

It is commendable that SATAWU have started responding to climate change through policy development and training its members and hopefully the programme would roll down to the rank and file members at the shop floor. However, the transport industry seems to be a huge tent which is sheltering a number of conflicting issues which have existed for ages and can threaten the efforts the union has begun to handle as far as climate change is concerned. The SATAWU cooperation with the two international trade union federations, the ITF and the UNI should not be limited to policy but also to programmes which engage elected leadership in the provinces. Government ministries, departments and metropolitan authorities should have operational units which are all enclosing so that there are no conflicts and imbalances which cause problems in the transport industry.

CHAPTER 6

CONCLUSION

6.1 Introduction

This research report focused on a serious developmental issue. Transport is a major source of the GHG emissions which cause climate change. This is true both globally and locally. Transport globally accounts for 13.1% of all GHG emissions, with emissions growing faster in this sector than in any other (IPCC 2007; Barrett 2011b).

In shifting to a low-carbon economy South Africa faces special challenges for two reasons: firstly South Africa have a carbon-intensive economy in which the 'minerals-energy complex' is still dominant, and secondly the country requires transportation proportional to its economy because its industrial centre is far inland from the coastline. The distance between cities is vast. South Africa accounts for 0.4% of the world's total GDP, but 0.7% of the world's transport costs and 2.2% of the world's surface freight ton kilometres (Barrett 2011c).

The South African government's GHG Inventory of 2009 indicates that, in 2000 transport accounted for 9.1% of all GHG emissions (39 511.31 giga gram out of a total of 435 461.62 giga gram). This figure excludes the 29 310 giga gram of emissions from fuel supplied to international aviation, and 8 826 giga gram emissions from fuel supplied to international maritime vessels (Department of Environmental Affairs and Tourism, 2009). This implies that there will be significant changes in the transport sector and the SATAWU members will be affected. However, SATAWU has many serious issues to deal with in addition to climate

change, such as corruption and the wage gap between its members and Transnet management.

6.2 Analysis

The responses reported in chapter four, from the SATAWU shop stewards reveal an alarming ignorance about climate change. While there are scattered insights from some officials these are not developed. Generally there is a lack of understanding about the impact of climate change on jobs and food prices. The lack of understanding on increased food prices as one of the effects of climate change amongst the SATAWU members is very serious because it will affect the wages that the union seems to be much more concerned about.

There is no mention at all of the social dislocation and disruption that will result from increased drought and crop failures in this continent. It should be noted that some of the responded already complained about foreigners taking their jobs and this has led to xenophobic attacks in a few years back. These are impacts which will be particularly severe in Africa.

The SATAWU members from different sectors mentioned that people's health will be affected by polluted water and they will contract air borne diseases from pollution. However, these points on health were not related to climate change directly.

The impact of climate change on jobs is very critical task for a trade union because its fundamental role is to protect the jobs of members. The section asking workers understanding about job losses was the most important in assessing workers' understanding of climate change to its possible effects on existing jobs in the transport industry. The study has shown that there is division among both officials and shop stewards on potential job losses. Some of the arguments dismissing job losses were pure denial which should be avoided lest they throw SATAWU into immense crisis when operational requirements have to be met.

However there is a significant intellectual capacity within SATAWU as evident in the material on how a significant number of climate jobs could be created in the process of transitioning to a low carbon economy. Barrett (2011c) has calculated that there are many interventions that can be made in the transport sector that both cut emissions and create jobs.

Some new jobs will be in operations, and others will be indirect new jobs in the supply of goods and services. The indirect jobs exclude new jobs in related manufacturing and construction activities. Extracting from the various chapters above, the direct and indirect transport jobs that could be created through these interventions are:

Direct and indirect jobs in transport operations

Transport sub-sector	**number of direct jobs**	**Multiplier**	**Number of indirect jobs**	**Totals**
Bus	7,000	5	35,000	42,000
Taxi	4,500	3	13,500	18,000
Commuter rail	2,380	3	7,140	9,420
Long distance passenger rail	398	3	1,194	1,592
Rail freight	8,208	3	24,624	32,832
Seafaring*	31,200	8	249,600	280,800
Total	**53,486**		**331,058**	**384,644**

Table 6.1**Note: Many of these seafaring jobs would be new to South African workers, but not new to the industry. This would be a process of replacing non South African seafarers with South African seafarers. The direct jobs that would be both new to South African workers and new to the industry would be the coastal seafaring jobs. The indirect jobs would be largely in expanded port operations (Barrett 2011c).*

Over and above these direct and indirect jobs, are the jobs that will be created in:

- Construction of bus rapid transit lanes
- Construction of cycle lanes
- Construction of pedestrian pavements, walkways and bridges
- Manufacture of bicycles
- Manufacture of new buses, taxis and rail rolling stock.
- Adaptation of existing transport fleets to accommodate cleaner fuels, alternative fuels etc.

Barrett writes, "The new job figures for these activities has still to be worked out by the One Million Climate Jobs campaign researchers who are dealing with the construction and manufacturing sectors respectively. "But a very conservative estimate for the purposes of this

chapter would be an additional 80,000. This would bring the potential total new transport related Climate Jobs to around 460,000" (Barrett 2011c: 27).

According to Barrett: (2011c: 27) "Going forward, SATAWU will have to actively pursue each of these interventions on a sub-sectoral level, as well as take up campaigns at the level of the transport sector as a whole. The public transport interventions in particular will require working together with COSATU as a whole, and building alliances with commuter organizations". SATAWU will also continue to work closely with the ITF, which has been leading the way in developing a global understanding of workers and climate change in the transport industry. (Barrett 2011c: 27)

All shop stewards interviewed in the course of this research identified their companies as contributors of GHG emissions while PRASA official explained their contribution to be indirect because they cause demand of coal generated electricity from ESKOM for their electrically powered rolling stock. This approach of minimising the damage an organisation is causing to the ozone layer can be linked to why other employers in the transport industry have adopted the 'business as usual' trajectory to climate change agenda. These indifferences are caused by the absence of specific policy or regulations for each industry. The white paper suggests that there should be further refinement at sectors, subsectors and organisational level (South Africa 2011).

Given the level of ignorance about climate change which this report has demonstrated, it is important for SATAUWU to be hosting its own training workshops on climate change. In the

2011 workshop participants were equipped with a clearer understanding of climate change than those who had not attended anything as they could unravel climate change issues better. Furthermore, it is crucial that shop stewards should understand their roles and duties in the union are different from those in the workplace in order to handle climate change issues properly. The union should be seen as the training home ground of the SATAWU team and the workplace as the competition playground. If the SATAWU team is well trained, it can foresee potential threats to jobs when changes are introduced and formulate appropriate strategy to be implemented.

Despite the absence of emission codes in different companies the SATAWU members provided suggestions on how emissions in the transport industry can be reduced. A just transition to a low carbon economy will probably involve indifference or resistance by employers in the transport industry for fear of increased production costs. Also SATAWU should use the transition as an opportunity to mobilize for new sources of power to improve the organisation of workers in the taxi sector and generally bargain for improved working conditions in the passenger bus, the passenger rail and the freight rail sectors. This is a 'soft version' of a just transition. A 'harder' version would involve demands for deeper, more transformative change in current forms of both production and consumption.

The emphasis on 'justice' is important. The SATAWU members suggested that there should be negotiations and engagement of all parties to ensure that workers are not negatively affected by the transition. SATAWU should do specific research which would enable it to respond efficiently and effectively, produce reskilling needed for those who would require alternative jobs, entrepreneur training for establishing cooperatives, terminal benefits should

be different from the current Employment Relations Act, job creation lobby, advocacy and political mobilization of all forces that support the working class for the provision of improved public transport by the government.

The research has shown that stakeholders in the public transport system are not ready for modal shift from road to rail for both passenger and freight. There is need for improvement of infrastructure for trains. The trains would not go everywhere so a feeder system of buses preferably and taxis to a limited extent would be needed. Besides, transport employers have not responded even by policy development and awareness to their employees to challenges posed by climate change. There is need for buses to increase their route capacity and rearrange time tables to suit commuters. The management of the passenger rail needs to be transformed to running the sector professionally; taxi drivers need reorientation in customer care. SATAWU non participation in the transport month is another drawback to the process of establishing a level field in which general understanding had to be reached. Road accidents before and during the transport month were shocking and need investigation of their causes and a sustainable solution to make public transport safer for all passengers.

6.3 Conclusion

In conclusion SATAWU and the broader labour movement have responded positively to challenges posed by climate change, but this is limited to broad policy development. There is a need for further education of rank and file members by the unions and members of the community. The urgent need is for general mobilisation for a just transition to a low carbon economy to occur to ensure environmental justice and sustainable development.

BIBLIOGRAPHY

Adam, F. 2010, *SASOL Profits from Poison*, Earthlife Africa Johannesburg: Braamfontein.

Alam, M. & Rabbazi, M.D.G., 2009, Vulnerabilities and responses to climate change for Dhaka. In: Bicknell, J., Dodman, D. & Saterthwaite, D. eds. 2009, [2010 Reprint] *Adapting cities to climate change: understanding and addressing Development Challenges*, pp. 93-110, London, Eathscan Publishers.

Allianz Knowledge n.d., Copenhagen Summit: The Verdict, viewed March 2, 2011, http://www.knowledge.allianz.com

Ausubel, H. 1993, The Rockefeller University, "Mitigation and Adaptations for Climate Change: Answers and Questions", The Bridge 23(3), pp.15-30, viewed March 2, 2011, http://www.phe.rockefeller.edu/mitigation/

Babbie, E. and Mouton, J. 2001, *The Practice of Social Research*, Oxford, Oxford University Press.

Baker, TL. 1994, *Doing Social Research*, Singapore: McGraw Hill.

Barrett, J. 2010, Sustainable low-carbon mobility within a framework of social justice, presentation to World Wildlife Fund Living Planet Roundtable, Johannesburg, October 26.

Barrett, J. 2010, "Reduce, Shift, Improve Transport and Climate Change" *South African Labour Bulletin (SALB)* Vol. 34(5), pp. 46-48.

Barrett, J. 2011a, Alternative Information Development Centre (AIDC), presentation to seminar, Cape Town, March 18.

Barrett, J. 2011b, Society Work Development Institute, University of Witwatersrand, presentation to seminar, Johannesburg, October 21.

Barrett, J. 2011c, Transport and Climate Jobs, SATAWU Research Paper
Produced for the One Million Climate Jobs Campaign, Johannesburg, November.

Bates, B., Kundzewicz, Z.W., Wu, S. & Palutikof, J. eds. 2008. Climate Change and Water. Technical Paper of the Intergovernmental Panel on Climate Change (IPCC), Geneva, IPCC Secretariat.

Campaign Against Climate Change, 2009, Response paper to the National Climate Change Response Green Paper, Johannesburg.

CAMCO and TIPS, 2010, Climate change: Risks and Opportunities for the South African Economy, Report, Woodmead.

Castells, M. 1997, *The Rise of the Network society*, Oxford, Oxford University Press.

Centre for Neighborhood Technology (CNT), 2010, New Report Reveals Missed Opportunity to Create Jobs, viewed May 15, 2011, http://www.cnt.org/news/2010/01/05/new-report-reveals-missed-opportunity-to-create-jobs/

Climate Justice Now South Africa (CJN!SA), 2010, Submission on National Climate Change Response Green Paper.

Cock, J. 2012, Witwatersrand University, The climate justice movement, Draft paper for Society Work Development Institute, Johannesburg, January.

Cock, J. 1991, "The environmental justice movement" in Ballard R et al, *Voices of Protest.* Durban, University of Kwa-Zulu Natal Press.

Cock, J. 2007, "Sustainable or Environmental Justice: Question for South African Labour Movement from the Steel Valley Struggle", *Journal of Labour, Capital and Society,* 40, (1&2), pp. 36-55.

Cock, J. 2010, SASA, "The Contribution of green jobs to job creation and environmental protection", Conference Paper, East London, June.

Cock, J. 2010, "Suicidal Regime: Green capitalism or environment justice?" *Journal of Southern African Labour Bulletin,* 34 (4) pp.52-54.

Cock, J. 2011, "Creating decent green jobs Alliance of labour and environment?" *Journal of Southern African Labour Bulletin,* 35 (2) pp.10-13.

Coombes, H. 2001, *Research Using IT*, New York, Palgrave Publishers.

COSATU, 2010. A Growth Path Towards Full Employment: Policy Perspective of Congress of South African Trade Unions, September 11, Johannesburg, Shereno Printers.

COSATU, 2011, Labour Initial Response to the National Climate Change Response to Green Paper, February 28, Johannesburg.

COSATU, 2011, Climate Change Project, July 29, Johannesburg.

COSATU, 2011, Policy Framework on Climate Change, September, Johannesburg.

Democratic Left Front of South Africa (DLF), 2011, Understanding Climate Change and COP17, booklet, Johannesburg.

Dimitrov, L. 2003, National Department of Transport, South Africa's First National Travel Survey. Viewed May 20, 2011, http://www.up.ac.za/dspace/bitstream/2263/6581/1/Dimitrov_South%282003%29.pdf

Fakir, S. 2011, Favouring Soft Option, Mail & Guardian, Johannesburg, February 25, p. 2.

Farrington, J. 1992, "Transport, Environment and Energy" in Hoyle, B.S. and Knowles, R.D. (eds.), *Modern Transport Geography*, London, Blehaven Press.

Gordhan, B. 2011, Budget Speech, viewed March 24, 2011, http://www.southafricainfo.co.za/

Gore, A. 2006. The Inconvenient Truth [Video recording], California: Paramount.

Gortz, A.1981, *Ecology as Politics*, Boston, South End Press.

Gumede, S. 2011, Climate Change: it time to change the system, *The Shopsteward*, COSATU, Johannesburg, pp.61-63.

Haukauf U. 2010, Energize In: Haukauf, U., Haikola, P., Maas W., (eds.). *Green Dream*, pp.260-265, Amsterdam, NAi Publishers.

Haukauf, U. and Haikola, P. 2010, Huge Airplanes and Super Fast Trains. In: Haukauf, U., Haikola, P. and Maas, W. (eds.), *Green Dream*, Amsterdam, NAi Publishers. pp.372-375.

Haukauf, U. Haikola, P., Maas W., Deceinick A., Forster, R. and Rivas, G. (2010), Twenty two observation of Today's green. In: Haukauf, U., Haikola, P., Maas W., (eds.) *Green Dream*, pp. 17-245, Amsterdam, NAi Publishers.

Heritage, n.d. Green Paper, viewed March 2, 2011, http://www.heritagesa.co.za/index.php

Iles, R. 2005, *Public Transport in Developing Countries*, Elsevier: London.

International Foundation for Sustainable Development (Sustainlabour) and United Nations Environment Programme (UNEP), 2008, "Climate Change, its Consequences on Employment and Trade Union Action", training manual, Nairobi, UNON.

International Labour Organisation (ILO), 2008, Green jobs Facts and Figures, viewed on March 15, 2011, http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/publication/wcms_098484.pdf

International Transport Federation (ITF) 2010, 42nd Congress Resolutions, viewed May 19, 2011, http://www.itfcongress2010.org/files/extranet/-2/24484/Congress%20Theme%20Document%2042nd%20C-8%20-1.pdf

ITUC, 2009, Workers and trade unions' consolidated contribution to the United Nations Conference on Sustainable Development, viewed January 5, 2012, http://www.ituc-csi.org

ITUC, 2010, Trade Union Recommendation for Cancun's Deliberations of the AWG-LA, viewed January 5, 2012, http://www.ituc-csi.org.

ITUC, 2011, "Durban Outcome: No Guarantees for the Climate as Governments Again Delay", press release viewed January 5, 2012, on http://www.ituc-csi.org.

Joubert, L. 2008, *Boiling Point: People in the Changing Climate*, Cape Town, Heinrich Boll Stiftung.

Khayile, S. 2011, State needs partner in rails plan. *Business Report.* Wednesday April 6. Johannesburg, p. 15.

Knowles, RD. and Fairweather, 1992, "Europe and North America", in Hoyles, B. S. and Knowles, RD. eds, *Modern Transport Geography*, London, Belhaven Press.

Gwenaëlle L., Ines, H., Nigel, B. and Sophier, B. 2009, The Energy Access Situation in Developing Countries, UNDP and WHO report viewed on, December 5, 2011,

http://www.undp.org/content/undp/en/home/librarypage/environment-energy/sustainable_energy/energy-access-in-developing-countries/.

Maddison, D. Pearce D., Johansson O., Calthrop, E., Litman, T. & Verhoef, E. 1996, *The true cost of road transport*, London, Eathscan Publishers.

McAllister, H. and Droste, E. 2011, Graighall Residents Association, viewed April 30, 2011, http://www.cra.org.za/index.cfm/p/pages.rainfal-figure.htm.

McDonald, J. 2011, China's electric car technology laws frighten films, *Business Report*, Thursday, April 21, Johannesburg, p.10.

Mertz, B. and Davidson, O. 2001, Climate Change 2001: Mitigation. E-book, viewed on April 17, 2011, http://www.books.google.co.za/books?hl=en&lr=&id=bPCkreo94d8C&oi=fnd&pg=PP9&dq=mitigation+to+climate+change&ots=_JFVlO04uB&sig=TREBTeAiTHMxat9B44HmQYUS-9w#v=onepage&q&f=false

Messner, H. 2003, National Academy of Public Administration,

Mntungwa, M. 2011, "Declaration of the Civil Society Conference" *The Shopsteward*, Johannesburg COSATU, January, pp.67-71.

Mukheibir, P. and Sparks, D. 2006, Climate Variability, Climate Change and Water Resource strategies for Small municipalities, January, University of Cape Town Press: Cape Town.

Muller, M. 2011, University of Witwatersrand. *What is South Africa's real water crisis?* Seminar Paper, Johannesburg, March.

National Traffic Information System (eNaTIS), 2011, Live Vehicle Population, viewed May 29, 2011, http://www.enatis.com/images/stories/statistics/livevehpopulationvehclassprov20110430.pdf

Neale, J. 2011, University of Witwatersrand, "One million climate jobs" seminar paper, Johannesburg, March 23.

Nel, M. 2011, COSATU wants to have a say in the green revolution, Mail & Guardian, February 25, p. 2.

Nhamo, G. 2006, "Why can't we clean up our own act?" *Journal of Southern African Labour Bulletin*, 30 (2) pp. 10-13.

Omo-Fakada, J. 1992, "Growth or Sustainable Development" in Hallowes, D. (ed.) 1993, *Hidden Faces; Environment, development, justice: South Africa and the global context*, pp. 226-236, Scottsville, Earthlife Africa,.

One Million Climate Jobs, 2011. One million climate Jobs booklet, Cape Town.

One World Guide, 2010, Poverty and Climate Change viewed, April 25, 2011, http://www.cnt.org/news/2010/01/05/new-report-reveals-missed-opportunity-to-create-jobs/

Paterson, M. 2007, *Automobile Politics: Ecology and Cultural Political Economy.* Cambridge, Cambridge University Press.

Rakotsoane F.C. and Rakotsoane M.A., 2007. *The ABC of Research Project, Dissertation and Thesis proposal writing.* Morija, Choice Publishing Company.

Rodhe, H. 1990, "A Comparison of the Contribution of Various Gases to the Greenhouse Effect" *Science* Vol. 248, viewed on April 8, 2011, http://www.sciencemag.org/content/248/4960/1217.full.pdf

Rue, BH. 2002, Transport Research Board, "Recent transportation and Land use planning experience in Charlottesville, Virginia" *Smart Growth and Transportation*, Conference Report, Maryland, TRB Publications.

Salgado, I. 2011, Heavy weights get ready to harness solar thermal power. *Business Repor*, Johannesburg, Thursday March 31. p. 1.

Salgado, I. 2011, Carbon tax will hamper jobs plans, say mines. *Business Report*, Johannesburg, Friday April 8. p. 1.

SASOL, 2010, Reducing our environmental footprint, viewed on May 11, 2011, http://www.SASOLsdr.com/sustainable_development_report_2010/performance/reducing-our-environmental-footprint/2/.

SATAWU, 2011. Viewed December 10, 2011, http://www.satawu.co.za.

SATAWU, 2011. Response to the National Climate Change Response Green Paper, Johannesburg, February11.

Satterthwaite, D., Huq, S., Reid, H., Pelling, M. and Lankao, P.R. 2009, "Adapting Cities to Climate Change in Urban Areas: The Possibilities and Constraints in Low- and Middle-Income Nations", in: Bicknell, J., Dodman, D. & Saterthwaite, D. (eds), [2010 Reprint] *Adapting cities to climate change: understanding and addressing Development Challenges*, pp. 3-52, London, Eathscan Publishers:.

Segger, M. and Khalfan, A. 2004, *Sustainable Development Law*, Oxford, Oxford University Press.

South Africa Government, 2010, National Climate Change Response Green Paper, viewed March 10, 2011, http://www.environment.gov.za.

South Africa Government, 2011, National Climate Change Response Policy, viewed November 5, 2011, http://www.environment.gov.za.

South Africa Information and National Association of Automotive Manufactures, 2007. South Africa: even more fast facts, viewed May 29, 2011, http://www.southafrica.info/about/416221.htm#auto

Statistics South Africa (STAS SA), 2010d. Transport, post and telecommunication industry, November 30.

TEST, 1986, Friends of the Earth, "Jobs on the move: The employment potential of an alternative transport policy", Author, London.

Treat, J. 2011, "Climate change: a primer for activists", *Khanya, No.27*, pp. 3-4.

Trochim, WK. 2006, *The Research Methods Knowledge Base*, 2nd Edition, viewed March 2, 2011, http://www.socialresearchmethods.net/kb/.

United Nations International Children and Education Fund (UNICEF), 2010. Water, Sanitation and Hygiene, viewed April 25, 2011, http://www.unicef.org/wash/index_statistics.html.

Webster, E. 2011, Society Work and Development Institute, "Dilemma of Job Creation and Decent Work" Seminar paper, March 4, Johannesburg.

Weiss, RS. 1994, *Learning from Strangers: The Art and Methods of Qualitative Interview Studies*. New York, The Free Press.

Whitelegg, JJ. 1993, *Transport For A Sustainable Future: The Case For Europe*. Belhaven Press: London.

Zuma, JG. 2011, State on Nation Address President of the Republic of South Africa, at the Joint Sitting of Parliament, Cape Town, viewed March 25, 2011, http://www.info.gov.za/speech/DynamicAction?pageid=461&sid=16154&tid=27985

Interviews

Cele, G. (pseudonyms). Participant in SATAWU Climate Change Workshop, St, Philonena Durban, 30 August 2011.

Eric, D. (pseudonyms). Transnet Shop Steward Chairperson, City Deep, Johannesburg, 10 August 2011.

Guduga, S. (pseudonyms). COSATU Social Policy Unit, Durban, 29 July 2011.

Mayise, H. (pseudonyms). Shop Steward in Passenger Bus, Johannesburg, 23 September 2011.

Mkize B., (pseudonyms). Participant in SATAWU Climate Change workshop, St, Philonena Durban 30 August 2011

Mkulu M. (pseudonyms). Shop Steward in Passenger Bus, Tswane Local, Pretoria, August 20, 2011.

Moetellipele, K. (pseudonyms). Shop Steward in Passenger Rail, Johannesburg, 25 September 2011.

Moholoane R. (pseudonyms). Provincial Vice-Chairperson in Passenger Taxi sector Johannesburg, 1 September 2011.

Mookameli, H. (pseudonyms). Provincial Chairperson in Passenger Taxi Johannesburg, 2 September 2011.

Mpumi Q. (pseudonyms). Provincial Secretary, in Road Freight, Johannesburg, 10 August 2011.

Ntaote, M. (pseudonyms). Passenger Rail Agency of South Africa Environment, Johannesburg, 26 July 2011.

Nthabiseng M. (pseudonyms). Shop Steward in Passenger Taxi, Johannesburg, 10 September 2011.

Nchoxele, Z. (pseudonyms). SATAWU National Campaigns Coordinator, Johannesburg 20 October 2011.

Pheni, P. (pseudonyms). Shop Steward in Freight Rail, City Deep, Johannesburg, 10 August 2011.

Sbale, O. (pseudonym). SATAWU Road Passenger Coordinator, Braamfontein, Johannesburg, 28 September 2011.

Tsietsi, M. (pseudonyms). Shop Steward in Passenger Rail, Johannesburg, 9 August 2011.

Participants Information Sheet

Dear Participant,

My name is Hlalele Hlalele I am a student of the University of the Witwatersrand, Johannesburg.

I am conducting a research study its tittle is: The Labour Movement Response to Climate Change: a Case Study of South African Transport and Allied Workers (SATAWU).

The research is intended to find out what are challenges facing SATAWU and COSATU in handling climate change issues in the workplace so that the role of trade unions can be better understood.

I invite you to participate in this research. Your participation will be in the form of interview between you and me.

Your participation in this research is voluntary; you are at liberty to decline participation if you do not want to.

Your refusal to participate does not have any penalty or loss of benefits which you may otherwise be entitled if you were to participate in the research.

You may discontinue your participation in the middle of the research should you feel so without any penalty or loss of entitlements.

The interview is expected to last for 30 minutes to one hour. The research is divided into two major sections the first part is biographic information, excluding your name as a participant. The second section is the interview about climate change.

Upon completion of the research a report will be produced and be made a public document, your opinions will not be captured such that you are exposed.

Yours sincerely

_____

Hlalele Hlalele

University of the Witwatersrand

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INTERVIEW SCHEDULE FOR SHOP STEWARDS

Section A- Biographic Information

1. What is your age range?

2. Which company do you work for?

3. What is your work in the company?

4. What position do you hold in the Local Shop Steward Council?

5. How long have you been in the position?

Section B- Questions Related to the Research Question

6. What do you understand by climate change?

7. Do you think it can affect employment relations?

8. Do you think people can lose their jobs for ever?

9. How is SATAWU addressing climate change issues?

10. What should SATAWU do to ensure that people cannot lose their jobs?

11. What should be done about those workers that may find themselves having to lose their jobs?

12. What do you think is your role as a shop steward in handling climate change issues in the union?

13. What do you thing is your role as a shop steward in handling climate change issues in the workplace?

14. Have employers started to say anything about climate change issues related to workplace (e.g shifting to low carbon emissions modes of transport)?

15. Are there any emission codes for drivers or mechanics that are in place?

16. How possible is it that private cars users can accept to use public transport?

17. Do you think public transport stakeholders (employers, taxi industry, workers and provincial government) are ready for the challenge of potential increase in passengers?

18. What are your general recommendations?