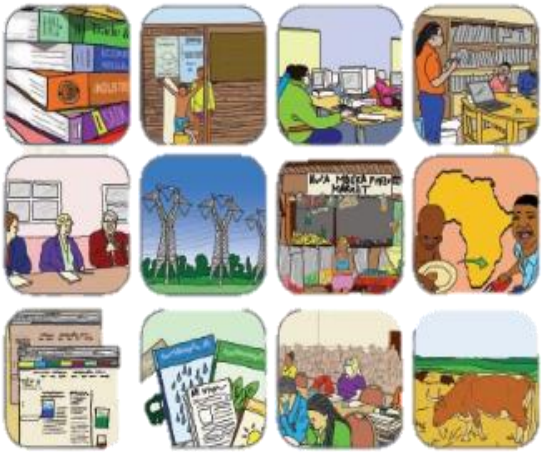
An Appraisal of Local Economic Development Impact Assessment Methodologies in the Context of the Community Work Programme (CWP)

Working Paper 2012 -00

April 2013



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The research was carried out by TIPS and funded by the Employment Promotion Programme (EPP), which is funded by DFID-SA.

EMPLOYMENT PROMOTION PROGRAMME

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List of Acronyms

CES	Constant Elasticity of Substitution
CWP	Community Works Programme
CVM	Contingent Valuation Method
CV	Contingent Valuation
DCOG	Department of Cooperative Governance
DS	Direct Support
DySAM	Dynamic Social Accounting Matrix
ECD	Early Childhood Development
EGS	Employment Guarantee Scheme
EPWP	Expanded Public Works Programme
IDPM	Institute for Development Policy and Management
ILO	International Labour organisation
LED	Local Economic Development
NREGA	Mahatma Gandhi National Rural Employment Guarantee
OFSP	Other Food Security Programme
PEP	Public Employment Programme
PSNP	Productive Safety Nets Programme
PW	Public Works
PWP	Public Works Programmes
RE	Randomized Evaluations
SAM	Social Accounting Matrix
TIPS	Trade and Industrial Policy Strategies

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1 Project Background

Post-apartheid South Africa has achieved reasonable economic growth, but not at a rate to effectively reduce unemployment and poverty. The benefits of growth have been heavily skewed in favour of a wealthy minority, whilst the poorer majority continue to face tough economic challenges. This extremely unequal distribution poses a real threat to South Africa's social stability. In response to the threat of social instability, the government has introduced a number of initiatives that have made inroads to reducing poverty, and creating employment especially for marginalized people. These initiatives include (but are not limited to) public works projects and public employment programmes. In fact, any initiative that serves the purpose of providing an employment safety net plays a crucial role in reducing unemployment and poverty, easing distress migration and delivering physical infrastructure and social services in ways that particularly benefit under-served communities while the job creation effects of economic growth eventually catch up and reduce unemployment.

Traditionally and historically, public employment has been driven by a public works model in which employment was based on specific short-term projects or works[1]. Since 2005, public employment programmes (PEPs) have undergone (and continue to undergo) a range of innovative changes. These innovations include the following dimensions: the duration of the work in public employment programmes, and the duration of the programme itself; the type of work performed, the implementation modalities, the objective of the interventions as well as the sustainability of such interventions. In this regard, the most striking public employment policy innovation originates from India, with the Mahatma Gandhi National Rural Employment Guarantee (MGNREGA)[2]. The dimensions of innovation are in the form of providing a *statutory guarantee* of 100 days' work to every rural household with unemployed members as opposed to previous Public Work Programmes (PWPs) that focussed on completing a specific project and/or in which the numbers of participants were limited by the work to be performed. Instead, in India, the work has to be designed to respond to the scale of need.

However, India is not the only place where there are cutting edge innovations. In Ethiopia, the Productive Safety Nets Programme (PSNP) is attempting to replace the reliance on food aid with more sustainable solutions. The PSNP operates as a safety net that targets transfers to poor households in two ways, through public works (PW) and direct

[1] *Employment Guarantee Schemes (EGSs) are a subset of Public Employment Programmes (PEPs), but are distinctive in that they guarantee a minimum level of employment to a specified population over a sustained or indefinite period, in effect representing a form of unemployment or income insurance.*

[2] *NREGA, which began in 2006, has over 8 million participants, and is funded by a donor consortium led by the World Bank.*

support (DS). Public works, the larger of the two programs, pays selected beneficiaries approximately US$0.75/hour for their labour on labour-intensive projects designed to build community assets. Direct support, in the form of cash or food transfers, is provided to labour-scarce households, including those whose primary income earners are elderly or disabled, in order to maintain the safety net for the poorest households that cannot participate in public works. The PSNP is complemented by a series of food security activities, collectively referred to as the Other Food Security Programme (OFSP). Beneficiaries of the OFSP receive at least one of several productivity-enhancing transfers or services, including access to credit, agricultural extension services, technology and knowledge transfers (such as advice on food crop production, cash cropping, livestock production, and soil and water conservation), and irrigation and water harvesting schemes. Beneficiaries are expected to remain in the PSNP for three years.

Historically, public works programmes were a crisis response, time-bound and focused on specific projects. However, there has been an increasing recognition that unemployment and underemployment are often structural and/or follow predictable cycles, and this has led to the increasing use of Public Employment Programmes (PEPs) as longer-term or on-going programmes able to respond e.g. to predictable cycles of food insecurity, or to provide a regular and predictable employment safety net in the absence of economic alternatives. This shift to longer-term programmes has allowed for more systemic impacts and has enabled alignment and convergence with other longer-term policy objectives. For example, India's employment guarantee is increasingly positioned as a part of its climate adaptation and green jobs strategy which spans a long time horizon, while that of Ethiopia is focused on food security and is thus centred around the implementation of a sustainable solution to what has been a long-term problem. South Africa's Expanded Public Works Programme (EPWP) includes a focus on labour-intensive infrastructure, but also introduced the first PEP targeting the social sector. It also has PEPs targeting the environmental sector, and has more recently included a further innovation in the form of the Community Work Programme (CWP), operationally implemented by the Department of Cooperative Governance (DCOG)

The CWP aims to provide an employment 'safety net' that provides access to a minimum level of regular work on an on-going and predictable basis for those who require it the most - unemployed and underemployed people at the local community level. In practice, the CWP offers two days of work a week (or the monthly equivalent), providing 100 days of work spread throughout the year at a daily rate of R67 (as of November 2012). Another difference between the CWP and other PEPs is the role that the community plays in deciding what work should be done, based on the consensus that such work should improve the area and the quality of life for the local community (DCOG, 2011).

The Employment Promotion Programme (EPP) funded the pilot phase of the Community Work Programme through Trade and Industrial Policy Strategies (TIPS)[3]. The CWP was handed over into government as a new component of EPWP on 1 April 2010 and as of March 2013, the CWP had over 150,000 participants in the programme over a total of 74 sites across South Africa.

[3] *TIPS is a Not-For-Profit Company (NPC) based in South Africa which specialises in economic research. TIPS facilitates policy development and dialogue in pursuit of sustainable and equitable growth in Africa. (www.tips.org.za)*

The CWP is multi-sectoral, but with a strong emphasis on social services – amongst other things. South Africa is still the only place in the world to include social services within its public employment 'menu'. These social services include home-based care, Early Childhood Development (ECD) Centres, provision of care for vulnerable households (i.e. orphans, elderly and the infirmed) and public awareness work around alcohol and drug abuse, crime prevention and sexual violence amongst others.

In all the previously stated examples of PEPs, there is a shift towards a longer-term commitment to public employment; although in different forms. In addition to this, the innovative PEPs all have a spatial dimension incorporated into them, with all the described PEPs providing an *on-going* employment safety net at the most local level of governance.

1.1 Problem statement

PEPs can have significant direct social and economic impacts on the lives and well-being of programme participants. These impacts are relatively well researched and established. Also of interest, however, is the potential for PEPs to act as a form of economic stimulus, with a range of potential economic multipliers within local economies. There are a number of different ways in which a PEP might do so; in a CWP Innovation workshop[4] on impact assessment hosted by TIPS on behalf of Department of Cooperative Governance (DCOG), evidence and experience from the site level was used to highlight a range of potential local economic development impacts of the CWP. The potential impacts that were identified included the following:

- The impacts of the incomes, and how they are spent
- The impacts of local procurement by the programme on the local economy;
- The impacts of the assets and services created;
- Financial inclusion effects through payments into bank accounts, and the use of diverse financial instruments, including e.g. in relation to savings, funeral cover, etc.
- The role of multiple factors deriving from the existence of a PEP that might enable local enterprise development (the rise in local consumption spending, the scope for participants to use incomes for productive investment, etc.).
- Impacts on local labour market dynamics – for example, effects on labour force participation, migration, work search, casual labour rates.

During the workshop discussions, it became apparent that the CWP (and by extension other PEPs) have multiplier effects that trickle throughout the economy at the local level. These effects go beyond the socio-economic benefits that accrue to the immediate PEP beneficiaries. A challenge is then to measure the full economic impact of such an intervention - a challenging task.

[4] *CWP Innovation Workshop in May 2011, held at the ORT Protea Hotel, Johannesburg .*

The literature review in the following section 2 attempts to identify what methodologies are being used – or might be used – to assess the impacts of PEPs on local economic development, in order to help inform impact evaluation approaches to CWP.

The World Bank defines Local Economic Development (LED) as the establishment of economic capacity of a local area with the aim of improving the locality's economic future and the quality of life for all. The World Bank goes on to define LED as local people working together with the hope of achieving sustainable economic growth that yields economic benefits and improves the quality of life for all in a community.[5] LED is a consequence of collective action from all actors within the economic sphere (public, business and civic organisations) with the aim of improving conditions for economic growth and employment generation. LED has been identified as one of the most important ways of decreasing poverty and creating sustainable employment.

The principal difference between LED and traditional approaches to economic development[6] is that LED combines a number of approaches and tools within a spatial context, cutting across many different portfolios (South African LED Network, 2010). Economic development at the national level is such a multidisciplinary approach that it often ends up producing enormous complexity with regard to issues and actors. LED on the other hand, focuses on the local and regional level, somewhat reducing this complexity and allowing economic actors to pursue a more integrated path of economic development. By its very definition LED is a territorial concept and falls into the overarching national development process with a specific emphasis on economic aspects.

One of the key elements of LED is community development, and PEPs such as the CWP have a strong contribution at this level. A key feature in CWP is the participation of the community in identifying what work needs to be done at the local level; this in turn has the potential to link into and strengthen processes of participatory local development planning, CWP employment creation makes a critical link to LED in that there is an income injection into the local economy[7]. In addition to this, the outcomes of the work in CWP have a range of both social and economic multipliers. For example, community food gardens provide a direct short-term benefit, while removal of litter from rivers that feed into the dams improves water quality, reduces purification costs, and can have significant – but hard to measure - long term benefits. In a broad sense, the measurable objectives of CWP and those of LED are linked, and based on this supposition, a method that is used to measure LED should be adaptable to measuring the impact that a PEP such as the CWP has on the local community.

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[5] *The 'community' here can be defined as a sub-district, city, town, metropolitan area, or sub-national region.*

[6] *These approaches include national industrial policy, technology transfer, SME support initiatives, infrastructure upgrading, urban planning and skills development.*

[7] *LED aims to create jobs by making the local economy grow. That being said, job creation stimulates the local economy leading to local economic development.*

1.2 Objective of the study

The objectives of this study are at two levels. Firstly, the purpose is to carry out a desktop study on the various methodologies that are used to measure the impacts of development interventions in general on LED outcomes; the second is to consider whether these methodologies could be used to assess the impact of PEP on LED, showing their weaknesses and their strengths, to inform impact evaluation of the economic multipliers from CWP. The focus has been narrowed to the following key themes:

- Methodologies able to measure the impacts of the economic multipliers from income spent in the local economy. This includes the impact of the incomes earned, as well as of local procurement by the programme within the local economy
- Methodologies to measure the economic impacts of the assets created and services rendered.
- The impact of participation in CWP on economic behaviour, including e.g. on the use of financial instruments, savings, labour market participation, work search, etc.
- The nature and range of livelihood and enterprise development initiatives enabled as a consequence of CWP. This is a cross-cutting category because the outcomes in this regard might be as a consequence of all three of the above. [8]

Each of these dimensions poses a different methodological problem. The aim of this study is to do some preparatory research in order to identify whether there are methodologies that have been tried and tested in relation to the measurement of any of these aspects of LED impact, and where the design challenges have already been considered and lessons learnt. This is in order to better inform the design of impact assessment of the LED impacts of CWP, with potential wider applications to PEPs in general.

2 Exploration of impact assessment methodologies relevant to LED

2.1 Introduction

At one level, a range of standard impact evaluation methodologies can be applied to the measurement of certain LED impacts. Traditional survey tools and qualitative tools such as focus groups and questionnaires are among the many standard tools that can be used to get insight into the dynamics in any local economy.

At the same time, wider debates over impact evaluation methodologies and the use of experimental and quasi-experimental methods also have a bearing on the approaches taken. As these approaches will be considered in relation to each dimension of impact that is of interest, the terms are briefly explained here.

[8] *While impacts on local labour markets can be an important issue, CWP does not yet operate at a scale likely to have systemic effects at this level. Impacts on issues such as labour-force participation and work search can however be explored in relation to participant behaviour.*

'Experimental' evaluation designs refer to research in which the impacts of an intervention are compared with a 'counterfactual' – where no such intervention has taken place; and where the selection of the 'counterfactual' is randomly done. Sometimes held up as 'the gold standard' of impact evaluation, it is not an approach that can be used in all contexts. In addition to experimental evaluation designs are a range of 'quasi-experimental' designs. These do not rely on randomised approaches, but use different methods to compare the impacts of a given intervention. They include the following:

Interrupted Time Series Analysis: This is a measure of trends before and after a given intervention. It requires very consistent data-capture over time for the results to be meaningful, and there are often difficulties in attribution of any change in outcomes, because of the difficulty in isolating the impacts of a given intervention from other dynamics.

Propensity Score Matching: This tries to 'match' and compare a group that does receive an intervention or 'treatment' with a group that does not , where the latter group is selected because of a set of variables that make them similar to the group receiving the treatment.

Difference in Difference: This compares data on a treatment and control group before the intervention takes place to establish the 'normal' difference between them, and then compares this with the actual difference after treatment.

Regression Discontinuity Design: This can be used where there is a clear cut-off for eligibility in a programme – for example, in any means-tested programme. Without the programme, there should be a certain continuity of results at the cut-off line; if a programme is introduced for those above or below that line, it's impacts should cause a 'discontinuity' – a gap in results that can be attributed to the impact of the intervention. (Summarised from Davies, 2012).

In addition to these impact evaluation methodologies are other research tools used, for example, for economic modelling; for measuring the returns on investment, as well as tools for capturing the detail of household expenditures.

This range of methodologies will be explored below, in relation to each of the impact areas prioritised.

2.2 Measuring the economic multipliers from increased local expenditure

This need to 'follow the money' in order to understand economic multipliers is shared with cash transfer programmes as well as any programmes that aim to attract more disposable income into a given local economy. Doing so is crucial to the claims made, for example, that PEPs provide a form of 'trickle up' stimulus, impacting on the local economy – and on the wider goals of growth from there.

The challenge of measuring this highlights methodological choices that will also affect other dimensions of LED impact. At one end of the spectrum are complex models such as Social Accounting Matrixes (SAMs) and Dynamic SAMs (DySAMs), while at the other end of the spectrum are 'Financial Diaries' - documenting and tracking the detail of financial decisions at household level. The discussion of approaches will start there.

2.2.1 Financial Diaries

Financial diaries focus at the level of participants and households, and are able to capture the first-round multiplier effects of the incomes earned, by capturing in great detail how such income is used. Financial diaries were pioneered by the Institute for Development Policy and Management (IDPM) at the University of Manchester and were constructed for the purposes of painting a comprehensive picture of the financial inflows and outflows of poor households in order to assess a specific set of pre-defined objectives. This is achieved by gathering data on income, consumption, savings, lending and investment over the course of a significant time period. This can, for example, be every day for a month, or weekly, or bi-monthly for a year – depending on what is being measured. The purpose includes both to get a detailed breakdown of the composition of spending, as well as the trends in spending, saving and/or investing.

A Financial Diaries project can be used to examine financial management in poor households with the objective of developing a multi-dimensional, comprehensive set of data on household financial management that has both qualitative and quantitative attributes. This methodology allows one to capture financial instrument usage across different types of households and track that usage over time. Not only would the financial flows be captured, but also the nature of the decisions that went with those flows. Texture of decisions refers to questions such as why a transaction was entered into, the intent behind the strategy driving the transactions, as well as how lump sums of money were used. The depth of this data set allows one to explore a host of issues related to the use of financial instruments. In South Africa, a similar methodology was used in a study carried out by the South African Labour and Development Research Unit (SALDRU) based at the Centre of Social Science Research at the University of Cape Town (Collins, 2004).

Financial diaries use questionnaires to assess how poor households make their financial decisions and make use of financial institutions and financial instruments. With the ability to record financial flows in great detail, the financial diaries methodology is a powerful tool in understanding the financial behaviours of impoverished households. This methodology also provides a view inside the household "black box" and gives the opportunity to observe how people live their lives on a daily basis, including the effects of particular social interventions. It also allows a chance to track changes in the roles that individuals play within households in decisions about how to manage money.

Both experimental and quasi-experimental approaches can be applied within the Financial Diaries methodology: either comparing participant households with non-participant households, or, for example, capturing 'before and after' results: the spending patterns before participation in CWP, for example, and after.

The goal of Financial Diaries may be to capture key junctures when households use a particular innovation and compare the results to households without access to the innovation. In this way, it is possible to assess the impact of an innovation on the overall well-being of the recipients of that service. The methodology centres on tracking inflows and outflows of cash and non-cash household resources on a regular basis. As the emphasis is on micro-flows, the best results are gained where the gap between measurement is tightest – with daily records giving the most detailed information. Even after a week, many people are unable to recall with great accuracy exactly what they have spent their money on, especially where the aim is to capture the finest detail -— every bar of soap bought, every basket of tomatoes sold, and every cash gift received. Using this methodology, one can analyse the data at transaction, individual, and household levels. The challenge to consider with this methodology is however the high likelihood of the respondents developing research fatigue through the process.

Given the resource intensity of the data collection, the length of the data collection period, and the resource implications, there is a limitation to the number households that can be included in a study. Consequently, the selection criteria of the households who are meant to be included in a study that involves financial diaries are critical.

The criteria to be considered when selecting the participants in the study can be broadly classified into three categories .The *first* is in terms of ensuring that the selected households are typical – economically, socially and culturally – of a given target community. *Secondly*, is familiarity: all households should be in areas where one or more of the research team has some knowledge of the local economy. The *third* criterion to consider is access: by their very nature, regular interviews demand that the research team be stationed locally. Other criteria that can be used are study/project objective specific.

The advantage of using financial diaries is that the depth of the information collected is rich and detailed, and has the potential to reveal the spending patterns of households that are linked to any PEP. Under normal circumstances, a key disadvantage is the cost associated with running extensive interviews over a long period of time

A way around the aforementioned would require some innovative thinking and some of the suggestions that come to mind include the use of a representative sample of all the CWP beneficiaries and focussing all the resources on that sample. In order to further reduce costs, it could be possible to employ a more skilled group of CWP participants to work as field agents and collect the data for the survey.

The keeping of financial diaries has been used mostly in microfinance and consumer surveys and mainly for the purposes of impact assessment of specific interventions by running a comparison of a group exposed to an intervention against another group that has not been exposed to the intervention. This methodology is yet to be used within the context of LED underpinned by a PEP setting- presenting an opportunity for innovation.

2.2.2 'Plugging the Leaks'

The extent to which inflows into a local economy circulate locally before leaving the local economy once more is an important factor determining the local multiplier effects of such flows, and their impact on local economic

development. While Financial Diaries can capture the first round of this process – identifying, for example, how much of the income from CWP is spent in the informal sector, in local stores and/or in nearby towns - the second round of effects is much harder to track.

An LED approach called 'Plugging the Leaks' involves local stakeholders in mapping and tracking the circuits of local expenditure, with a view to increasing awareness of this issue and with it, behaviour change that enhances local spending. This approach has been utilised by Seriti Institute at some CWP sites, creating a bridge between the anti-poverty impacts of CWP and its scope to contribute to LED. While its purpose is programmatic, and the impacts of this are worthy of evaluation in themselves, the question is whether the processes of mapping the circuits of expenditure could be adapted as a tool to measure – or at least to provide greater insight – into local multipliers from a research perspective. This is an area for further innovation.

A more ambitious strategy to enhance local spending involves the creation of local currencies: such as the 'Brixton Pound' in the UK, developed as a local alternative currency that can be used only within the local economy, to encourage the circulation of money and enhance local multipliers. The existence of such a local currency should provide conditions under which to track the circuits of money within a local economy; in the absence of such mechanisms, however, tracking the multipliers poses real methodological problems.

Tracking the circuits of spending in a local economy and beyond poses the first methodological hurdle; in the absence of a methodology to do so, comparing outcomes with and without an intervention becomes that much more difficult, and it does not lend itself easily to either experimental or quasi-experimental approaches. Random selection of a comparison 'local economy' would face significant problems of attribution, when so many factors influence outcomes in any local economy. 'Before and after' approaches face similar constraints.

2.2.3 Social Accounting Matrices (SAMs)[9]

The difficulty of measuring multiplier effects in a local economy is shared at a national level, and has led to the development of models that attempt to do so at a much more complex level.

A SAM is an economy-wide data framework, typically representing the economy of a nation/local economy and its uniqueness lies in its analytical and predictive use as a tool to represent and forecast system-wide effects of changes in exogenous factors: rather than to measure actual outcomes or make comparisons over time. Nevertheless, because its purpose is to model the impacts of flows within an economy, its potential for use in impact assessment was considered here.

A SAM comprises a comprehensive, disaggregated, consistent and complete data collection that captures the interdependencies that exist within a socio-economic system (Isard, 1998). When, for example, households experience an increase in disposable income - perhaps through the proceeds of participating in a PEP - they could

[9] *This section relies on work published in Round (2003)*

spend more money on fresh food or beverages from local outlets. They might then go to a local supermarket and spend a larger share of their income there. Supposing that this is a phenomenon that occurs with all the households in the locality, the consequence would be that the supermarket - or the retail sector in general - needs to obtain more products from the food production sector, which raises its demand for agricultural products. Because of this increasing demand, more labour input is needed which increases the income of certain households even more, who again could spend more money. This kind of interdependency between sectors and households can be captured within a SAM. In developing countries, the SAM has historically been used widely to explore issues such as income distribution (see Adelman et al., 1978), the role of the public sector (Pleskovic & Trevino, 1985), and the impact of inter-sectoral linkages on (rural) poverty alleviation (Khan, 1999).

As expected with most economic accounting systems, a SAM records transactions taking place during an accounting period, usually one year. A SAM has three characteristic features. *First,* the accounts are represented as a square matrix, where the incomings and outgoings for each account are shown as a corresponding row and column of the matrix. The transactions are shown in the cells, so the matrix displays the interconnections between economic actors explicitly. *Secondly*, a SAM is comprehensive, as it shows all the economic activities of the system (consumption, production, accumulation and distribution), although not necessarily in equivalent detail. *Thirdly*, a SAM is flexible. Although it is usually set up in a standard, basic framework, there is a large measure of flexibility both in the degree of disaggregation and in the emphasis placed on different parts of the economic system.

As it is an accounting framework, not only is the SAM square, but also the corresponding row and column totals must be equal. Clearly, at one extreme, any set of macroeconomic aggregates can be set out in a matrix format. However, this would not be a 'social' accounting matrix in the sense in which the term is usually used. An overriding feature of a SAM is that households and household groups are at the heart of the framework. Only if there is some detail on the distributional features of the household sector can the framework truly be called a 'social' accounting matrix. Also, a SAM typically shows much more detail about the circular flow of income, including transactions between different institutions (including different household groups) and between production activities, and in particular records the interactions between both sets of agents via the factor and product markets.

The standard national SAM distinguishes between the activity account[10] (an account which caters for production activities) and the commodity account (an account for domestically produced goods/services and the goods and services from/to foreign countries are marketed). Thus an activity column allocates total production costs in producer prices whilst an activity row collects revenues of production activities from home or foreign consumption. A column of the commodity account represents the supply of composite commodities to home markets that arise from domestic production and import; and its row represents total interior demand. In other words, a commodity column disseminates aggregate absorption in the economy to domestic production and world markets and tax revenues of

[10] *An activity account is equivalent to the productive sectors in input-output tables.*

government in market prices, whereas its row aggregates total domestic absorption of the economy including intermediate inter-sectoral demands.

A great advantage of a SAM is its ability to capture a wide variety of developments in an economy, as it links production factor and income accounts. A large share of economic interactions take place within the household sector and a SAM disaggregates the cells involving 'returns for labour' and the household sector into smaller groups (such as different income groups) to show the effect of the different behaviour of these groups. Furthermore, it is a relatively efficient way of presenting data as the presentation of data in a SAM immediately shows the origin and destination of the various flows included. Another advantage is its usefulness as a tool to reconcile different data sources and fill in the gaps. This enables the reliability of existing data to be improved and inconsistencies in data sets of different nature and origin to be revealed (Alarcon, 1991).

Another advantage of the SAM is its ability to predict changes in economic agents'/actors' spending habits in the event of a change in some exogenous factor. The former is achieved in the most basic form by a multi-agent approach, where each agent/actor represents one (or more) households belonging to one of several socio-economic groups. Once the agents/actors are defined, and a SAM of the local economy is constructed, a spending matrix can be set up for the purposes of predicting an agent's /actor's spending decisions, (given the actor's spending decisions are defined). Computer simulation techniques (Artificial Intelligence) can be used to give the agent the possibility to make decisions on how to satisfy these spending priorities. Also, social dynamics, the simulation of strategic planning behaviour, learning, and exchange in limited networks can be incorporated into the decision making process, bringing the outcome as close to reality as possible[11].

There are however also disadvantages and constraints to the model. Most of the disadvantages of a SAM concern the production activities accounts. Important, and sometimes restrictive, assumptions made in the SAM are that all firms in a given industry employ a constant production technology[12] (usually assumed to be the national average of input, output and labour for that industry), and produce identical products. Because the tables are produced only for a certain period, the model can become irrelevant as a forecasting tool when production techniques change. Other disadvantages are that the model assumes that there are no economies or diseconomies of scale in production or factor substitution, and that they do not incorporate the existence of supply constraints. In a rather static situation,

[11] The models provide a relatively simple structure to examine the potential effects of exogenous policy (or external) shocks on incomes, expenditures and employment, and the like for different household groups, within the context of a fixed price setting. The model should work out the broad orders of magnitude and directions of effects, provided the underlying assumptions are correct. Circumstances where the model will likely give inaccurate multiplier estimations are in instances where an economy faces bottlenecks in any sector, in the supply of goods or services, or in key factors of production. The usefulness of multipliers is limited to examining the real-side effects of quantity-based shocks. Multipliers cannot handle price shocks or ascertaining price effects.

[12] Typically, production technologies are specified using Constant Elasticity of Substitution (CES) functions that describe how different types of inputs can be substituted for each other as determined by the elasticity coefficients. The SAM uses fixed coefficients in production, and as such fails to cater for any changes in the production process.

these *ceteris paribus* conditions are a perfectly acceptable position which has demonstrated its great relevance in a long (spatial) economic research tradition. However, in a highly dynamic context, with complex space-time system interactions, stable solution trajectories are less likely to occur (Nijkamp, 2007). Finally, the production accounts are essentially based on a linear production technology (e.g. doubling the level of agricultural production will in turn double the inputs, the number of jobs, etc.). This reveals something of the inflexibility of the model. Thus, the model is entirely demand-driven, implying that bottlenecks in the supply of inputs, or increasing efficiency effects are largely ignored (van Leeuwen *et al*., 2005). Another limitation is the assumption of fixed prices in SAMs.

There are also some practical problems in the development of a (local) SAM. The statistical estimation of a new matrix is very labour-intensive and expensive. This is mainly because much of the information is gathered with the help of micro-survey questionnaires. A related problem with this method is that interviewees, firms, or households, are not always able to give correct answers. Sometimes they do not understand the question, or they do not want to tell the truth, and therefore - as a result of a response bias - the results are not always perfect. That being said, a SAM is still a very useful tool in that it shows effects throughout the whole economy, linking the different accounts.

Classic examples of the use of SAM to establish the extent of LED include the work of Leatherman & Marcouiller (1996) who focussed on the prospects for rural economic development and made use of a SAM analysis to examine the distributional characteristics associated with local economic development policies targeting agricultural production, agricultural processing, forestry production, forestry processing, and tourism for a small rural region in Wisconsin. In this instance, the SAM analysis was used as a means to measure the impact of local development policies in addressing questions of lagging rural income growth.

Another example is the recent work carried out by Grant *et al*. (2008) that focussed on the effect of community benefit payments given to communities that are involved in renewable energy projects (an expression of the renewable energy developers' "good will") to be used by the community in whatever way they deem reasonable. In this study, the focus was on the Shetland Islands with the aim of evaluating the potential local economic and employment impact of a large onshore wind energy project proposed for the Islands. This was achieved through the use of a SAM.

In the context of PEPs, Hiraway (2006) did some work on the village of Nana Kotda in India. The paper analyses the multiple impacts of employment guarantee programmes in India within the MGNREGA framework. The novelty of the study is that it develops a village level Social Accounting Matrix (SAM) to assess selected dimensions of the study's predefined impacts.

A village level SAM was constructed for Nana Kotda utilising the custom village SAM to demonstrate that MGNREGS (or other PEPs), when implemented well and at scale, can reduce poverty and empower poorer communities in the short-run. Furthermore, the multiplier analysis conducted through the SAM demonstrated the positive impact that MGNREGS had on incomes, production and employment in the village of Nana Kotda.

The World Bank is in the process of completing a SAM designed to analyse the economic dynamics within a township called Dieplsoot, outside Johannesburg. As the CWP has a site in Diesploot, attempts were also made to include data that might enable its impacts to be assessed or modelled; but the scale of the programme relative to the size of Diesploot meant impacts were hard to measure or attribute in the short term.

2.2.4 Dynamic Social Accounting Matrix (DySAM)[13]

A Dynamic SAM (DySAM) is an instrument based on an existing 'static' SAM. The DySAM is designed to support and strengthen national development strategies by analysing the effects of investment planning on the economy in a system currently being implemented. DySAMs are specifically configured to explore the relationship between intensive employment strategies and job creation, and ultimately, poverty reduction.

The DySAM was born out of the need to analyse dynamic real-time data. More concretely, a DySAM has to be able to deal with the four main problems of a static SAM that include:

- A SAM model being static with fixed coefficients;
- Data in the SAM refering to one single period (normally a year);
- The year of the SAM normally not being current;
- A SAM lacks behaviour, which means that that the static SAM gives a snapshot of the economy, devoid of the consistent evolution of the economic structure over time.

It is these properties that allow the DySAM to be used for: *(i)* counterfactual simulation analysis, for example a given magnitude of exogenous injections in any year within the period for which the DySAM is computed. This helps to validate valuable experiences such as analysis of completed public policies/programmes; and *(ii)* short-run policy simulations from the terminal year and after.

The contrasts between the traditional 'static SAM modelling' and DySAM modelling can be summarized as follows:

1. A DySAM is a tool that is based on an *existing static SAM* for the economy of a country and the available data from national accounts, balance of payments, budget and financial statistics;
2. The static SAM gives a snapshot of the economy, while a DySAM shows the consistent evolution of the economic structure over time, for periods covering the years before and after the static SAM;

Combining 1 and 2 above, a DySAM thus helps to identify cross-section and time-series data problems and improves the data gathering processes. Further contrasts include that:

1. Several sequential SAMs over time imply dynamics;
2. Shifts over time reflect technology choices;

[13] *This section relies heavily on the work of Alarcón et al. (2011)*

3. A DySAM lessens the need to calculate expenditure income elasticities in order to introduce behaviour, i.e. SAM fixed-price model [14];

4. There will always be one DySAM period that matches the surveys (e.g. labour, household expenditure, population, etc.), which eliminates the need to introduce time-bound assumptions;

5. An employment satellite account for one or several years with disaggregated labour market data can be added and coupled with the DySAM, and matched with the exact year of the particular survey;

6. A DySAM allows the use of place holders when information is scarce, missing or not fully reliable. This can be done via satellites, for instance, to dynamise the sectoral disaggregation of the construction sector;

7. The use of place holder values eliminates the need to hold up programming before final data are provided;

8. The DySAM can be updated when new data become available or when a more current SAM and/or System of National Accounts (SNA) time-series data come on-stream.

As is the case in all modelling attempts the, accounting consistency[15] is of paramount importance. One cannot over-emphasise the importance of a time-consistent and reliable database consistency to allow the derivation of dynamic SAM multiplier sequences. It goes without saying that the base year, the SAM structure, the number of accounts, the types of classifications and the account openings will limit or enrich the quality of analysis that may be envisaged.

Also, while modelling with a dynamic SAM, similarly to static SAM modelling, satellite accounts can be used to introduce a wider range of analyses. Satellites can be of the 'expanding or extending' types. The former refer to the use of information to 'blow out' existing entries in the SAM. For instance, the original SAM household and labour factor classifications can be increased or altered. Similarly, the construction sector can be separated into various types of activities or commodities (i.e. infrastructure, roads, irrigation, etc.). The latter refer to the extension of certain accounts with directly linked physical information. Such information types can be as varied as employment, environmental aspects, types of housing, demographic information and morbidity satellite tables, to name a few.

The DySAM multiplier analysis, using the SAM framework, helps to gain a better understanding of the dynamic-interdependent linkages between the different sectors of the economy and the institutional agents at work within the society, namely households, enterprises and the government. The SAM and the DySAM face the same practical problems in their construction, i.e. the high cost and labour intensity of the data collection and the response bias.

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[14] See Pyatt & Round (1979)

[15] The SAM is read from column to row, and as such each entry in the matrix is sourced from its column heading, going to the row heading. The accounting consistency referred to here is the requirement that each column is summed up to equal each corresponding row.

In sum, although the work in India seems to illustrate that there may be potential to adapt this methodology as a tool for evaluating the impact of a PEP in a local economy, the evidence so far remains rather thin.

2.3 Measuring the Impacts of the Assets and Services created by PEPs

2.3.1 Economic multipliers from infrastructure development

In public works programmes that have focussed on infrastructure, assessing the impacts of the infrastructure created has been a main focus of impact evaluation work, and in relation to infrastructure such as roads in particular, there are well-developed methodologies for measuring the social and economic multipliers.

Rural roads have no value in themselves. The key role they play is to provide access. Benefits may arise from improved access to markets and jobs, access to education and health services, access to credit and business and access to information. Other benefits may result from reduced travel and transport costs and employment created during construction as well as the more nebulous social benefits of increased interaction between people through more frequent social trip making (Pearse, 2006).

In an ILO Impact Assessment in Laos PDR, a compelling case is made for the economic impacts of the two access roads built: it tracks the increase in the number of traders, the composition of trade, average travel time to markets, the rise of new forms of travel service, increased access to agricultural lands, the increase in ownership of motorbikes. It then makes as compelling a case for the social impacts of the roads: improved use of health services, improved access to water, clinics, schools and district centres: of time saved, trips made, costs saved: all quantified.

It is convincing because a diverse set of plausible indicators were identified upfront; a good baseline study was done at the start of the programme which meant that all these indicators could be measured again in 2005 with a high degree of reliability, and the results can on the whole be clearly attributed to the presence of the access roads. The Impact Assessment takes a potentially 'technicist' output – such as rural roads – and demonstrates the social and economic 'meaning' of these roads for these communities (Philip 2010).

So while there is little scope to use experimental approaches to evaluate the economic impacts of rural roads, in this instance, a well-structured 'before and after' study was able to show plausible effects.

As with many of the assets and services created in PEPs, the impacts are not confined to participants – in fact, the impacts may not even be particularly significant for participants – but instead impact on opportunities and access in the wider community. Participants are not, therefore, necessarily a primary target in the design of impact evaluation for such assets; identifying who is most likely to benefit and who therefore should be included in the research is part of the methodological challenge.

2.3.2 Methods for measuring the value of environmental assets and services[16]

Environmental assets and services are a growing part of the menu of work in PEPs internationally. In CWP, there is also some element of work in the environmental sector, which can include interventions such as food gardens, recreational parks, donga repair, river-cleaning, water-course management, and land rehabilitation. This sub-section explores some of the methodologies being used to estimate the value of Ecosystems, as a basis for measuring the impacts of interventions that improve their functioning.

The challenge in this regard, however, is that ecosystems and/or environmental assets and services are rarely bought and sold in markets (although markets for environmental services are growing). This creates challenges in placing an economic value on them, which is necessary if the purpose is to measure the economic value created by enhancing them.

The concept of value in conventional economics is the maximum amount of one thing an individual is willing to give up to get more of something else. Strictly speaking the aforementioned is considered a fair measure of the relative "value" of the two things to that person. Currency units (Dollars, Rand, Euro etc.) are a universally accepted measure of economic value because the amount that people are "willing to pay" for something reflects how much of all other for-sale goods and services they are willing to give up to get it.

In order to evaluate the perceived economic value of ecosystem services, and equally so for the value of PEP environmental services infrastructure, it is important to note that measuring the value of something using currency units does not require that it be bought and sold in markets. It only requires estimating how much purchasing power people would be willing to give up to get it (or would need to be paid to give it up), if they were forced to make a choice.

Following on this reasoning, there are various methods that are used to estimate money-based measures of economic values associated with ecosystems. These include:

1) Market Price Method: The market price method estimates the economic value of ecosystem products or services that are bought and sold in commercial markets. The market price method can be used to value changes in either the quantity or quality of a good or service. It uses standard economic techniques to measure the economic benefits from marketed goods, based on the quantity people purchase at different prices, and the quantity supplied at different prices.
2) Productivity Method: The productivity method, also referred to as the net factor income or derived value method, is used to estimate the economic value of ecosystem products or services that contribute to the

[16] *This section relies on the work done by King et al. (2000)*

production of commercially marketed goods. It is applied in cases where the products or services of an ecosystem are used, along with other inputs, to produce a marketed good.

3) Hedonic Pricing Method: The hedonic pricing method is used to estimate economic values for ecosystem or environmental services that directly affect market prices. It is most commonly applied to variations in housing prices that reflect the value of local environmental attributes. It can be used to estimate economic benefits or costs associated with environmental quality, including air pollution, water pollution, noise and environmental amenities, such as aesthetic views or proximity to recreational sites.
4) Travel Cost Method: The travel cost method is used to estimate economic "use" values associated with ecosystems or sites that are used for recreation. The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a site represent the "price" of access to the site. Thus, peoples' willingness to pay to visit the site can be estimated based on the number of trips that they make at different travel costs. This is analogous to estimating peoples' willingness to pay for a marketed good based on the quantity demanded at different prices.
5) Damage Cost Avoided, Replacement Cost, and Substitute Cost Methods: The damage cost avoided, replacement cost, and substitute cost methods are related methods that estimate values of ecosystem services based on either the costs of avoiding damages due to lost services, the cost of replacing ecosystem services, or the cost of providing substitute services. These methods do not provide strict measures of economic values, which are based on peoples' willingness to pay for a product or service. Instead, they assume that the costs of avoiding damages or replacing ecosystems or their services provide useful estimates of the value of these ecosystems or services.
6) Contingent Valuation Method: The contingent valuation method (CVM) is used to estimate economic values for all kinds of ecosystem and environmental services. It can be used to estimate both use and non-use values, and it is the most widely used method for estimating non-use values. It is also the most controversial of the non-market valuation methods. The contingent valuation method involves directly asking people, in a survey, how much they would be willing to pay for specific environmental services.
7) Contingent Choice Method: The contingent choice method is similar to contingent valuation method, in that it can be used to estimate economic values for virtually any ecosystem or environmental service, and can be used to estimate non-use as well as use values. Like contingent valuation, it is a hypothetical method – it asks people to make choices based on a hypothetical scenario. However, it differs from contingent valuation because it does not directly ask people to state their values in dollars. Instead, values are inferred from the hypothetical choices or trade-offs that people make.
8) Benefit Transfer Method: The benefit transfer method is used to estimate economic values for ecosystem services by transferring available information from studies already completed in another location and/or context. For example, values for recreational fishing in a particular province may be estimated by applying measures of recreational fishing values from a study conducted in another province.

At an applied level, research in India has focussed on assessing the returns on investment from investment in water-related assets (see Verma, 2011).

2.3.3 Economic impacts of social services

In CWP, many of the services are primarily social in nature, such as home-based care for vulnerable households, support to Early Childhood Development, community safety, youth recreation and more. Many of these have economic impacts also, although often more indirect. So, for example, home-based care services have the potential to release productive labour in the household – typically of women – in ways that unlock increased productivity.

Methods for measuring these kinds of effects could use a combination of survey tools, an adapted form of Financial Diaries, and could lend themselves to experimental and quasi-experimental methods.

2.4 The impacts of participation in PEPs on opportunities, capabilities and economic behaviour

Part of the impact of PEPs on local economic development is as a result of changes in the behaviour of participants or others affected by the programme. This can include increases in savings, the formation of savings clubs or buying groups, increased investment in productive assets, changes in patterns of work-search, changes in access to information and opportunity, as well as changes in labour-market participation by others in the household or by beneficiaries of the assets or services provided. For example, the care services provided to vulnerable households as part of home-based care may release household labour for more productive purposes.

Some of this information can be gathered through Financial Diaries; further to this, an understanding of change processes can be gained through survey tools and focus groups, and both experimental and quasi-experimental approaches can potentially be used. For example, where participation in CWP is oversubscribed, participants can be randomly selected from the eligible participant group, allowing for a randomly selected comparison group. “Before and after” methodologies can also be utilised.

As the same applies to the identification of certain social impacts of participation in CWP, it may not make sense to separate the impacts on economic behaviour from the exploration of the social impacts, but to identify a set of research instruments that can be used in complementary ways for the best results. Research by Prinsloo and Vawda (2003) on the impacts of participation in CWP on the capabilities of participants provides insight into the kinds of indicators that might be most useful.

2.5 The impacts of PEPs on local enterprise development and livelihoods

Each of the above categories of potential economic impact are likely to include some level of contribution to local enterprise development and to strengthening livelihoods:

- The increase in spending in the local economy can be expected to strengthen a range of existing forms of local enterprise, and potentially to enable new forms of enterprise to emerge also.
- For participants, regular access to income may mitigate the risks of investing in enterprise activity or livelihood activity. For example, Prinsloo and Vawda found that 36% of CWP participants had home-based vegetable gardens compared to 22% in the wider community. New exposure to information and to new skills could increase the likelihood of this effect.
- Assets created may enable local enterprise activity, for example, through the creation of improved market infrastructure for the informal sector.

No examples of rigorous research assessing the impacts of PEPs in this regard was found, despite much anecdotal evidence of such impacts; so this is another area for innovation in the design of methodologies.

A combination of the methods outlined above would have to be considered. A suggestion by representatives from SALGA during consultation on this paper was that a simple tool to guage the impacts on local enterprise could be to survey local businesses during the inception of a CWP site, and then survey them after a period of time, both to guage their views on the impacts of the CWP on local spending, as well as to identify the rate of new business formation. An adaptation of the Financial Diaries model could be considered, that involved local business in tracking purchasing trends linked to paydays.

3 Overview of findings

This section summarises some of the main outcomes of the research, in relation to the priority impact areas discussed:

The impact of increased expenditure in the local economy, from incomes earned as well as from local procurement

The impact of the cash injection from CWP wages into the local economy and the effect that the cash injection has on LED is built on the premise that poor communities remain poor in part at least because poor people spend little, and that this is exacerbated where the money does not circulate for long within the local economy, but instead returns quickly to areas of economic concentration. Simply put, the lack of money circulation is one of the principle elements limiting LED. An extension of this premise leads to the notion that the more incoming money is passed from hand to hand within the local economy, the more the local economy will be stimulated. The multiplier effects of the incomes from the CWP unfold as they ripple through the economy, and the more they circulate locally, the more they will stimulate LED.

In a context in which it is increasingly being argued that PEPs have the potential to act as a form of local stimulus able to reach marginalised local economies, it becomes crucial to be able to provide some form of measure of the scale of this effect, yet no methodology emerges as providing a reliable or simple way of doing so.

Financial Diaries can provide detailed qualitative information on the first round spending patterns of participants; an adaptation of this approach could track first round impacts of local procurement. But the question of how money circulates within the local economy from there – or not – is far more difficult to establish.

While the SAM and the DYSAM appear to have the potential to do so, both are complex and cumbersome, reliant on a magnitude of data in relation to the local economy as a whole. While in theory, they should, for example, be able to model the impacts of a 10% increase in the PEP wage, this assumes that the PEP operates at a significant enough scale for the effects to be visible across the local economy as a whole. While this may apply to MGNREGA, it does not apply to CWP at this stage. Both approaches are also designed more as predictive models than as evaluative tools, and are so far largely untested at the level of the local economy. So while a predictive model that assumes a certain level of scale may be a useful input into policy debate, this serves a different purpose from an evaluative tool that attempts to track real multipliers.

Clearly, this is an area for innovation in the development of tools and methodologies for impact evaluation.

The economic impact of the assets and services

Traditionally, public works programmes have a specific sectoral focus: for example, infrastructure – or, more recently, a focus on environmental assets and services. While the methodologies for assessing the economic multipliers from these are relatively well established, they benefit from having a focus on a largely common set of outputs. In a multi-sectoral programme such as CWP, there are multiple types of assets and services created, and many are primarily social in character – with potential economic spin-offs. This makes it extremely difficult to use any one instrument or approach to measure the economic impacts or multipliers from the assets and services created at an overall level, and this creates enormous potential complexity in getting any kind of aggregate assessment of the economic impacts and multipliers.

The assets in CWP also tend not to fall into the categories of assets that more traditional public works programmes entail, limiting the scope to rely on tried and tested approaches to the evaluation of infrastructure or environmental asset creation. With a 65% labour intensity requirement, CWP is not involved in any significant road construction, for example.

An option is to try to group particular types of assets and services that lend themselves to common methodologies and/or to select only the most common assets or services, and focus on these.

The impact of participation on economic behaviour, financial inclusion, work search etc.

Here, the methodological issues are not too complex, and a range of methodologies could be applied, preferably including a complementary mix of qualitative and quantitative approaches – including scope for both experimental and quasi-experimental approaches.

Of the methodologies described above, the best ones to measure the effects of labour force participation in the local economy would be the SAM and DySAM. Employment multiplier analysis in SAMs can be utilised to gain insights into the impacts of PEP interventions on the labour dynamics of a localised economy.

Impacts on local enterprise and enhanced livelihood activity

As a crucial dimension of LED impact, it is of interest that there appears not to have been much specific focus on this as an impact area for PEPs. It is an area that poses difficulties in the use of experimental approaches, although some quasi experimental approaches such as "before and after" evaluations could be done. It is however an area for further methodological development and innovation.

4 Conclusions

There are a number of different trajectories of impact of PEPs in a local economy. Evaluating each one of these impact areas poses different sets of methodological challenges, and within each area, there are methodological choices to be made. In most instances, there is no single approach able to stand alone in providing answers.

In addition, there are aspects of the economic multipliers from PEPs that have been under-researched, and hence an absence of tried and tested methodologies. There are also methodological gaps, where there seem to be no easy solutions. Specific features of the CWP also complicate the task, such as its multi-sectoral character.

Yet this is a vital dimension of the impact of PEPs in general and CWP in particular: making this an area for further innovation in the development of approaches able to fill these gaps.

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