

Public Works

Technical Report for the Youth Employment in sub-Saharan Africa Toolkit



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Technical reports are intervention-specific summaries based a review of relevant studies from sub-Saharan Africa contained in the Youth Employment Evidence and Gap Map (EGM). This report is prepared by Howard White, The Research and Evaluation Centre. The meta-analysis was performed by Nina dela Cruz, Centre for Evidence-Based Social Sciences, Lanzhou University.

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About this technical report

This technical report is one of a series of technical reports being produced to document the evidence base for interventions to increase youth skills and employment in sub-Saharan Africa. The report is based on a review of relevant studies from sub-Saharan Africa contained in the Youth Employment Evidence and Gap Map (EGM).

The purpose of this report is to inform the content of the What Works for Youth Employment in sub-Saharan Africa Toolkit. This report provides results from both the quantitative evidence from impact evaluations and the qualitative evidence from process evaluations. The former are the basis for the impact rating and the latter the lessons from implementation. The critical appraisal of the studies, which was undertaken for the EGM, provides the basis for the confidence in study findings.

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Abbreviations

BPL	Below Poverty Line
CDD	Community-driven development
CFA	Central African Franc
CSO	Civil Society Organisation
EGM	Evidence and Gap Map
EPWP	Expanded Public Works Programme
ILO	International Labour Office
JPYES	Joint Programme on Youth Employment in Somalia
KDP	Kecamatan Development Programme
M&E	Monitoring and Evaluation
MSE	Micro and small-enterprises
NREGA	National Rural Employment Guarantee Act
NYEP	National Environment Youth Project
PEJEDEC	Emergency Youth Employment and Skills Development Project
PPP	Purchasing Power Parity
QIECP	Quick Impact Employment Creation Project
RCT	Randomized Controlled Trial
UNDP	United Nations Development Programme

Plain language summary

<i>What is this report about?</i>	This report reviews the findings from the English language evaluations of public works programmes in sub-Saharan Africa.
<i>What are public works programmes?</i>	Public works programmes are publicly-funded programmes which employ people for a limited duration. Traditionally public works programmes have invested in infrastructure, but may also be used for conservation work or social care. Public works employees are typically paid a low wage, often the minimum wage or below. In this way these programmes are self-targeting to the most needy, though additional targeting – usually geographic – may also be used. Quotas may be set for employment of women, youth or people with disabilities. Workers may receive training before engaging in the public works. The construction of infrastructure is usually contracted out, and training may be provided by private contractors for this purpose. These contractors may include micro and small enterprises (MSEs) owned by youth.
<i>In what context are public works programmes implemented?</i>	Public works programmes in sub-Saharan Africa are most usually implemented following an emergency, such as conflict, rather than as a regular anti-poverty programme. They have also been implemented as a component of donor-funded projects and so are of limited duration. The exception to both these statements is the South Africa's Expanded Public Works Programme (EPWP).
<i>What are the main design choices?</i>	The main design choices for public works programmes are: (i) the identification of participants; (ii) how much to pay participants; (iii) what training they should receive; (iv) who implements the works, e.g. SMEs, and what training or other support they receive; and (v) the assets to be created by the works.
<i>How are public work programmes expected to work?</i>	Public works programmes create temporary employment directly through hiring young people. They may create employment indirectly through a number of channels: the assets they create, technical and soft skills development amongst participants, and stimulating youth-owned private enterprises including small contracting firms. They may also have production multiplier effects (the firms undertaking the construction buy inputs from other producers), and from use of the infrastructure which is constructed, and consumption multiplier effects (worker income is spent locally on local produce).

<i>What sort of activities do public works programmes support?</i>	Public works programmes provide temporary employment, most usually to build assets such as roads, though they may also be involved in community or environmental services. Participants in public works may be provided with training. Training and other support such as finance may be provided to the firms implementing the works.
<i>What sort of infrastructure do public works programmes support?</i>	The projects included in this technical report supported the construction, rehabilitation or maintenance of a range of infrastructure. Three of the projects are exclusively focused on roads, and two more include roads amongst eligible infrastructure. Four projects support a range of community infrastructure such as water supply. Two projects have a conservation focus such as terracing, tree planting, and ponds. EPWP also includes social sector work and income-generating activities.
<i>Implementation issues</i>	The major implementation issue identified is missing targets for numbers employed, which can be caused by delays and insufficient funds so youth are paid late and not always in full.
<i>The effects of public works programmes</i>	Public works programmes provide a direct transfer to young people, and so are effective in increasing their income in the short-term. The young person gains work experience and some public works programmes also provide training to young people. Some participants in public works programmes go on to use savings to start a small business. There is low confidence in these findings because of the low number of included studies. Qualitative data support the sense of self-worth and self-efficacy resulting from wage employment. However, the evidence does not support that there are long-run effects. There is medium confidence in these findings.
<i>Cost analysis</i>	The results of reported cost analysis vary. Costs are likely to be highly variable between settings.
<i>How strong is the evidence base?</i>	Analysis of effects is based on two impact evaluations from a single study, so confidence is low. There are eight process evaluations, with an overall confidence of medium.
<i>Implications for research</i>	More impact evaluations are needed, which can assess different design approaches.
<i>Implications for policy and practice</i>	Governments across sub-Saharan Africa should institute national-level public works programmes in conjunction with technical skills training for youth and business training for youth-owned MSEs.

	Programme design should include impact evaluations in their monitoring and evaluation (M&E) system.
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What are public works programmes?

Public works programmes are publicly funded programmes which employ people for a limited duration. Traditionally public works programmes have invested in infrastructure, but may also be used for conservation work or social care. Public works employees are typically paid a low wage, often the minimum wage or below. In this way they are self-targeting to the most needy, though additional targeting – usually geographic – may also be used. Quotas may be set for employment of women, youth or people with disabilities. **Workers may receive training before engaging in the public works. The construction of infrastructure is usually contracted out, and training may be provided by private contractors for this purpose.** This may include micro and small enterprises (MSEs) owned by youth.

Public works programmes in developed countries were historically used as a counter-cyclical measure to increase labour demand during economic downturns, such as the New Deal in the United States during the Depression in the 1930s. In Latin America, they became popular as part of the workfare movement in the 1990s. One of the earliest development impact evaluations is Jalan and Ravallion's (1999) analysis of the Trabajar programme in Argentina, that offers low-paid work - at the time of this study this was a wage of US\$200 a month which was less than the average monthly earning in the poorest decile in Buenos Aires (US\$263). The public works repaired and developed the local infrastructure in poor areas. The study found a 25% increase in income for those aged 15-24.

In South Asia public works are amongst the anti-poor interventions which are permanently in place. Most notable is the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA) in India which guarantees 100 days' work a year to any household officially recognized as being Below the Poverty Line (BPL).¹

The **public works programmes in sub-Saharan Africa** are different in two respects. First, they **are implemented following an emergency, usually conflict, rather than as a regular anti-poverty programme.** Second, they are part of donor-funded projects and therefore typically of limited duration. The exception to both these statements is South Africa's Expanded Public Works Programme (EPWP)

¹ BPL cards are issued to these households, allowing access to a range of government programmes.

How are public works programmes expected to work?

Public works programmes increase youth employment directly by employing the youth to construct public works.

In addition, there are **indirect effects from the skills and experience gained, and any training provided**, during the public works programme which may increase future employability. Being in work, rather than unemployed, may build work habits, increase self-respect and the desire to more actively seek further employment. The worker may also be able to save to have funds to invest in their own business.

Public works programmes are often implemented by small businesses, which may be youth owned. These businesses may receive training from the programme, and will gain experience by working on projects. So there may be positive effects on local businesses.

In addition, **the assets created by the public works programme may increase productivity of other activities**. There **may be both consumption multiplier effects**, from the injection of cash into the local economy, and production multiplier if local materials are used in construction.

What are examples of public works programmes in sub-Saharan Africa?

Of the eight cases of public works for youth included in this report, four are in post-conflict settings (Sierra Leone, South Sudan, Somalia, and Côte d'Ivoire). Of the other four, one (Kenya) mentions the post-economic crisis context and one (The Gambia) political unrest.

Design choices

The projects supported the construction, rehabilitation or maintenance of a range of infrastructure. Three of the projects were exclusively focused on roads, and two more included roads amongst eligible infrastructure. Four projects supported a range of community infrastructure such as water supply. Two projects had a conservation focus such as terracing, tree planting, and ponds. EPWP also included social sector work and income-generating activities.

The projects mostly used self-targeting to individuals or youth groups or enterprises – in the latter cases the youth had to make project proposals. For the evaluation in Côte d'Ivoire applicants were randomly assigned to the programme. One case used community targeting i.e. community members identified proposed participants, and in one other the project selected individuals though it is not said how this was done. Some projects have a goal for female participation, and may undertake community sensitization to encourage this.

The works are often implemented by small and medium enterprises (SMEs) which may be youth-owned. Participants and SME owners may receive training as part of the public works programme.

Further details of the individual projects are given in Table 1.

Table 1: Examples of public works programmes

The <i>National Environment Youth Project (NEYP)</i> in Rwanda provided jobs for young people in conservation activities for the Nyabarongo River System (ITAU Auditors Ltd, 2013). The project organized unemployed youth to work on terracing, tree planting, rehabilitation of degraded areas, solid waste collection, sorting and recycling to make fertilizers for agriculture sector and briquettes for cooking to reduce using firewood and contribute to environmental protection. These activities were intended to create employment and generate income for the youth, removing the youth from crime, and eradicating poverty among the affected communities. The projects were proposed by Youth Associations in the districts.
The <i>Quick Impact Employment Creation Project (QIECP) for Youth through Labour-based Public Works</i> in Sierra Leone aimed to create jobs for youth from labour-based infrastructure development in a post-conflict setting. The project trained private contractors and funded feeder roads rehabilitation and maintenance for them to undertake employing young people identified by the project in communities along the roads (Arowolo, 2012).
The <i>Joint Programme on Youth Employment in Somalia (JPYES)</i> included a public works component targeted at youth for labour-based rehabilitation of infrastructure and assets. Thirty percent of the beneficiaries were intended to be women (Shumba et al., 2019).
<i>Youth Employment for Sustainable Development</i> in Kenya trained youth in low cost road rehabilitation and maintenance techniques known as “Cobblestone paving” and “Do-nou” technologies. Youth were intended to start their own microenterprises to win contracts to undertake this work funded by the project (Karuga, 2012).
Under the <i>Safety Net and Skills Development Project</i>, South Sudan, the bulk of project funding was for the public works component which would pay wages/transfers (US\$3 per day per beneficiary) for 15-20 work days per month in one year (up to a maximum of 90 days in all). It was intended that 50% of the beneficiaries would be women (Mileiva and Abbott, 2019). The following infrastructure was supported: (i) small flood control structures, (ii) ponds and other water harvesting structures; (iii) spring development and hand dug wells; (iv) soil and water conservation activities such as nursery development, terracing, and tree planting; (v) feeder roads; (vi) crop storage facilities; and (vii) solid waste disposal and environmental sanitation activities in urban areas.
A public works programme was a sub-component of the <i>Emergency Youth Employment and Skills Development Project (PEJEDEC)</i> in Côte d’Ivoire carried out in the wake of the conflict arising from the 2010/11 election (Bertrand et al., 2021). The programme provided low-skills young workers temporary employment in road maintenance works for seven months. The payment received by the young workers amounted to CFA 2,500 (equivalent to US\$10 PPP 2014 per day). The program covered 16 urban and peri-urban localities in Côte d’Ivoire. All young men and women aged 18 to 30 were eligible to apply to the program.
South Africa’s <i>Expanded Public Works Programme (EPWP)</i> started in 2004. It is not targeted solely at young people, but has a target for the percentage of jobs that should be available for young people, which has risen over time, i.e. from 30% in Phase 1 (2004-08) to 80% in Phase 4 (2020-24). An evaluation in 2019 found 55% of the beneficiaries to be youth (Motala and Ngandu, 2019). EPWP is not restricted to infrastructure. Eligible projects can also focus on the environment, culture or the social sector, and there can also be income-generating projects. The target groups are the unemployed and marginalized, particularly the unskilled, people who were not on social grants, the poor, women,

people living with disabilities and youths. Targeting is both geographic and self-targeting by paying the minimum wage.

Employment Creation for Youth to Build Sustainable Peace in The Gambia aimed at building sustainable peace by creating employment for 397 young women and men in infrastructure construction works, supported by skills training and entrepreneurship support. The constructed works were selected so as to benefit agriculture, tourism and fisheries.

What has been the implementation experience of public works programmes?

This section presents evidence on the implementation of public works programmes. The evidence on implementation most usually comes from process evaluations, though some impact evaluations may also provide relevant data.

Missing and meeting targets

Of the three projects for which there are data, in two cases the project paid for fewer person days of labour than intended. Youth Employment for Sustainable Development in Kenya achieved 67,150 days which was half the target of 135,000 (Karuga, 2012). The Quick Impact Employment Creation Project (QIECP) for Youth through Labour-based Public Works in Sierra Leone created just 75,000 person days of work for 500 youth compared to the target of 440,000 days – that is only 17% of the target (Arowolo, 2012).

Projects also struggled to meet their targets for female beneficiaries. In Sierra Leone only 12% of supported work days were for women. Low female participation was attributed to social norms, despite the project's efforts to address these norms through consciousness raising in communities (Karuga, 2012).

In contrast to these experiences, in the case of the Safety Net and Skills Development Project, South Sudan, targets were exceeded. US\$11 million was transferred to beneficiaries as public works wages. As a result, temporary employment was provided to 53,163 people (of which 74% were women) compared to the target of 34,000 people and 50% women beneficiaries (Mileiva and Abbott, 2019).

The major causes of missing employment targets were start up delays, delays in funds disbursement and a shortfall in funding compared to original plans. These problems are common across youth employment programmes in developing countries. For example, in Rwanda over one-third of youth were not paid in full partly because of insufficient project funds. Additional causes in Kenya were the Roads Authority not identifying suitable roads for inclusion in the project, a lack of youth-run MSEs to implement projects, and the high cost of the stones required for cobblestone technology, reducing funds available for labour (Karuga, 2012).

Other implementation issues

The implementation issues for EPWP are somewhat different, reflecting South Africa's higher level of development. **Workers complained about (i) doing the same task as municipal workers for less pay; (ii) hazardous working conditions; (iii) unsatisfactory living conditions; (iv) lack of transportation; (v) insufficient or inadequate tools and equipment such as work boots or gloves; (vi) delayed payments; and (vii) a lack of monitoring.**

A study of community-led infrastructure projects (but not public works) compared the experience of Malawi and Zambia (Carvalho et al., 2002). Facilities were much better maintained in Zambia, where the project had ensured that maintenance arrangements were in place at the community-level. This was not the case in Malawi, where infrastructure was often in a poor condition.

The effects of public works programmes

There are two impact evaluations of a public works programme in Côte d'Ivoire which is targeted at youth. There are more impact evaluations of public works programmes, but these are not targeted at youth, and the studies do not report age-disaggregated effect.

The study of Bertrand et al. (2021) (high confidence study) evaluates a public works programme which was a sub-component of the Emergency Youth Employment and Skills Development Project (PEJEDEC) in Côte d'Ivoire. The programme provided low-skilled young workers temporary employment in road maintenance works for seven months. The payment received by the young workers amounted to CFA 2,500 (equivalent to US\$10 PPP 2014 per day). The program covered 16 urban and peri-urban localities in Côte d'Ivoire. All young men and women aged 18 to 30 were eligible to apply to the programme.

There was over-subscription with a random sample of youth being accepted into the programme, and others assigned to a control group. Young people were randomly assigned to one of three treatment arms: (i) public works only, (ii) public works plus entrepreneurship training or job search skills, and (iii) public works plus wage jobs search skills training.

The results show **that most youth in the programme would have been employed even in the absence of the programme, but that this employment may well be self-employment.** Specifically, **nearly all the treatment group were employed during the programme (99% compared to 85% in the control), with a much larger share in wage employment (97% compared to 49% in the control),** and less likely to be self-employed (25% compared to 35% in the control). Those employed in the programme worked longer hours per week (36 versus 21), but they worked six hours per week less in self-employment. During the programme, youth in the programme had higher earnings, expenditures and savings than those not in the programme.

However, most of these effects were not sustained. A year to 15 months after the intervention ended there was no significant difference between treatment and control in employment status or expenditure. The treatment group had slightly higher earnings from self-employment – there is also a significant effect on business activities - but with no difference in total earnings. Average effects across all earnings outcomes shows no

significant impact (see Annex 1). However, **the treatment group retained higher savings than the control group**, though they were only one quarter of what had been saved during the programme. This evidence is consistent with economic theory which predicts that when a person receives higher than usual income they will 'smooth' their expenditure, by saving a large part of it to support higher expenditure both now and in the future. But such smoothing is limited with savings being largely run down in just over a year.

Table 2: Studies of public works programmes in sub-Saharan Africa

Study	Intervention	Findings
Bertrand et al. (2021)	Emergency Youth Employment and Skills Development Project (PEJEDEC). Seven months employment in road maintenance works, Côte d'Ivoire	<i>Participants versus control (during programme):</i> Employment: 99% vs. 85% Wage employment: 97% vs. 49% Self-employed: 25% vs 35% Hours worked per week: 36 vs. 21 (but six hours less in self-employment) Earnings: 63% higher amongst participants <i>Participants versus control (12-15 months after programme):</i> No effect on employment, self-employment or hours worked. Small effect on earnings. Positive effect savings and wellbeing.
Kimou et al. (2019)	Same programme in Côte d'Ivoire	Initial reduction in trust, but becomes positive effect 12-15 months after programme

Comparing the three treatment arms, **the group receiving entrepreneurship training in addition to public works worked an additional five hours a week and had 30% higher income from self-employment.** There was no effect on any other outcomes including work habits or behaviour.

The authors report the results of a simulation exercise which showed that **a larger effect could be achieved by targeting the poorest rather than relying on self-targeting**, although that would come with additional administrative costs.

Kimou et al. (2019) (low confidence study) examine the effects of the same programme on social cohesion and the participants' trust in institutions. The motivation of the paper is to assess the extent to which youth employment interventions can help build peace, rather than the effect on employment or income. There are adverse effects on trust in the short-run (4-5 months into the programme), but this changes in a year after the programme ends with positive effects being observed.

Additional benefits from public works

The interventions built assets as planned. For example, in South Sudan the rehabilitation or maintenance of 517 community assets and innovations in group farming in rural areas were supported through the intervention.

Descriptive factual data (i.e. not counterfactual analysis) show that beneficiaries enjoyed increased income. **Most beneficiaries used the money for food and health expenditures. But in Rwanda and South Sudan the evaluations report that beneficiaries used the cash transfer to save and start small scale income generating activities, such as agriculture and retail** (ITAU Auditors Ltd, 2013 and Mileiva and Abbott, 2019).

One of the projects intended youth to create MSEs to act as contractors for the commissioned public works. Community-driven development projects which also financed small-scale local infrastructure (more usually education and health facilities but also roads, bridges, and water supplies) also had a good experience of training and utilizing local contractors (Carvalho et al., 2002; Kumar, 2003).² However, this aspect of public works investments has not been subject to rigorous impact evaluation.

Dealing with corruption

The issue of corruption is not mentioned in any of these studies. But since public works programmes are prone to both grand and petty corruption in both developed and developing countries it is worth mentioning the evidence from other developing countries of effective means of safeguarding against it. These are: monitoring, accountability, and centralized construction standards and costings.

Monitoring of the quantity and quality of work performed, and independent verification from workers of the number of days worked are likely to reduce corruption, which often takes the form of work being poorly or incompletely executed, or of overcharging for work tasks. A randomized controlled trial of civil society (CSO) monitoring of a public works programme in Peru found that it reduced the costs per project by an average of US\$75,000 (Lagunes, 2019). In another randomized controlled field experiment on the Kecamatan Development Programme (KDP) in Indonesia villages were told that a road construction

² These projects do not count as public works projects as the community labour contribution was unpaid.

project that was about to start would be subject to a government audit. The results suggest that this top-down monitoring did reduce corruption - the difference between official project costs and an independent engineers' estimate of costs was reduced by 8% (Olken, 2007).

Accountability is increased by transparency. In India every single transaction from NREGA is available online. CSOs take this information to the villages to verify the days claimed by contractors. The introduction of biometric ID cards – the Aadhar card – which facilitate direct payments to beneficiaries have reduced corruption further still (Muralidharan et al., 2016; and Bhardwaj and Cyphert, 2020).

The use of centralized design and engineering standards, together with a geographic unit cost database can support the quality of construction and ensure that costs are not inflated (Carvalho et al., 2002).

Cost analysis

Bertrand et al.'s (2021) analysis of PEJEDEC in Côte d'Ivoire shows that, despite the benefits documented above, the direct impacts on youths' earnings during and after the programme participation remained substantially below programme costs as there were large administrative costs. Hence the intervention is not cost effective.

In contrast, Mileiva and Abbott (2019) reported that the public works component of the Safety Net and Skills Development Project in South Sudan was cost effective compared to earlier and similar programmes in the region, costing US\$1 for every US\$2.36 transferred in wage benefits to the intended recipients.

In general, **it is difficult to compare the economic analysis of projects because of differences in interventions and context as well as the methodology between studies.**

From a design and implementation point of view it is useful to list the inputs required for cost planning purposes. These costs are:

1. **Basic project administration costs:** There are trade-offs to be made in administration costs: (i) reaching poorer, more remote, regions can help meet poverty objectives but is more costly; (ii) targeting mechanisms also help reach poverty objectives, but may also be costly to implement. The most common approach of geographical and self-targeting is likely the most appropriate approach for public works, but more evidence is needed on this question; and (iii) on-site supervision is costly but can help ensure construction quality and avoid corruption.
2. **The cost of works is the major expense for the project:** unit costing of eligible infrastructure based on a geographical unit cost databases of materials to be used by contractors is necessary for the project and preferably available at the design stage.
3. **Training:** training will likely be necessary for contractors and for workers (the latter possibly being provided by the contractors). Unit cost estimates for training and numbers trained (expecting attrition between training and participation) should be made.
4. **Monitoring and evaluation system:** public works programmes remain under-evaluated so including an impact evaluation in the project budget would be helpful.

The overall assessment of the ratio of benefits to costs for public works programmes is that it is uncertain, and is likely highly variable depending on design and context.

Implications of study findings

Public works programmes in sub-Saharan Africa have mostly been used in a post-conflict or crisis setting. Programmes suffer implementation problems which mean that they often fail to meet their target number of participants. Those who do participate enjoy a temporary increase in wage income, though this may not be sustained. Longer run effects may come from skills development or the assets created, but there is little evidence about this.

Implications for policy and practice

Given the very limited evidence, it would be appropriate for governments across sub-Saharan Africa evaluate public works programmes in conjunction with technical skills training for youth and business training for youth-owned MSEs to undertake construction work. Whilst donor funding may be sought, **these should be national programmes rather than short-duration programmes undertaken in the context of specific donor projects,** which can be taken to scale if their benefits are proven.

There are a number of design decisions to be made by those designing and implementing public works programmes:

1. Defining the target group and how to reach them. Public works programmes are usually geographically targeted, and use self-targeting by paying a low wage.
2. Consider how to include more disadvantaged groups, including women. Setting quotas alone will not usually be sufficient for achieving such quotas.
3. Determine eligible infrastructure and the means for identifying it. Public works programmes in sub-Saharan Africa generally support small-scale infrastructure, so community-level identification may be possible and appropriate.
4. Have a plan for the maintenance of infrastructure constructed by the programme – where does the money come from and who is responsible for doing it?
5. Have in place a centralized system for infrastructure design and costing, whilst being aware of administrative costs.
6. Decide who will manage construction, which is most usually private sector firms. Decide if preference may be given to youth-owned firms in awarding construction contracts.

7. Determine what training is to be provided and who will provide it. Training in the skills to be used in construction may be expected to be provided by the contractor. But business training will need a different provider.
8. Providing business training to all participants, given the possibility some will use savings from public works income to invest in their own business.
9. Put in place safeguards against corruption.
10. Finally, include an impact evaluation in the M&E system.

Implications for research

There is a considerable evidence gap for public works programmes in sub-Saharan Africa.

The evidence base needs to be built especially with more impact evaluations. There are very few impact evaluations of public works programmes in sub-Saharan Africa, especially with respect to their effects on young people.

There are also no impact evaluations of the impacts of infrastructure created by the public works programmes in sub-Saharan Africa. There is also no to little evidence on targeting mechanisms, nor on effective ways to increase female involvement - though evidence from other intervention categories shows the importance of childcare provision and ensuring safety from sexual harassment. Finally, there are no studies of local economy effects through business creation and the consumption and production multipliers. More studies are needed in these areas, preferably RCTs.

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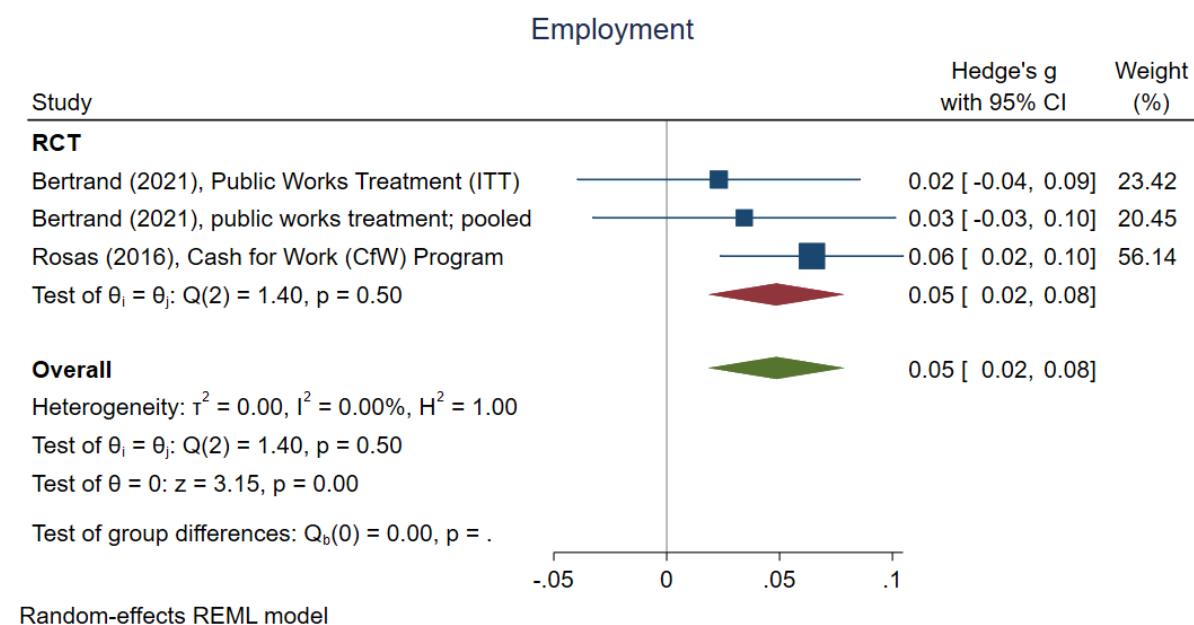
Annex 1 Results of meta-analysis

There are two impact evaluations of a public works programme in Côte d'Ivoire which is targeted at youth: Bertrand et al. (2021) and Rosas (2016).

The results from these two studies are summarised in Figure A1.1. There is a significant effect on employment, business (self-employment), income, material welfare (savings), , psychological outcomes, and youth skills.

The I^2 and Q statistic are measures of heterogeneity, that is the extent of variation in effect sizes between studies. Since this forest plots different outcomes from the same study, these statistics are not relevant in this case.

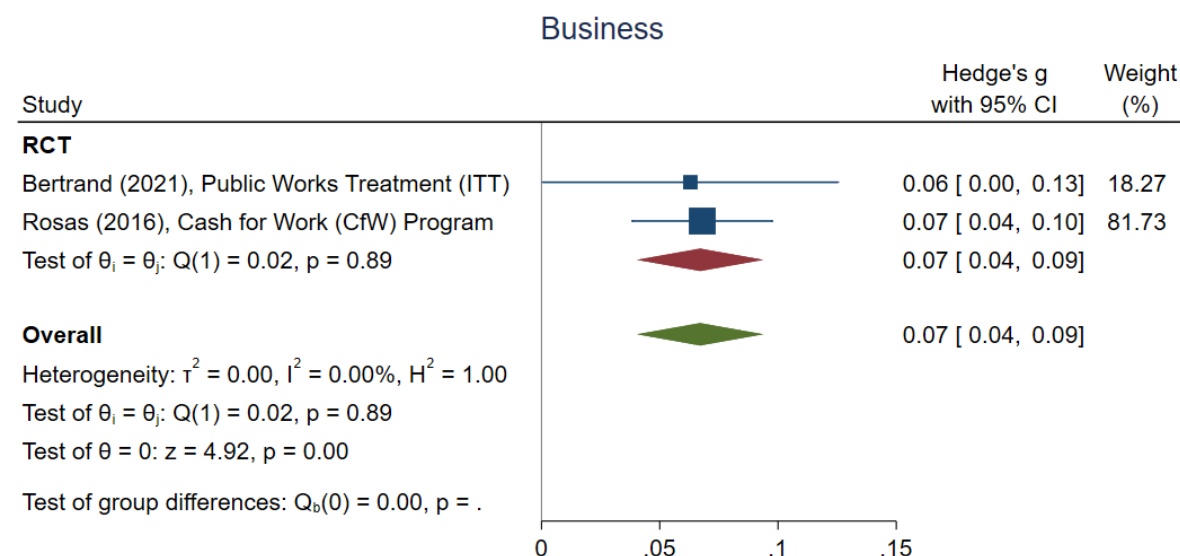
Figure A1.1: Effect of public works programmes on employment



Source: Authors' calculations.

Notes: CI = confidence interval; RCT = randomized controlled trial; p = prob value. I^2 , H^2 , τ^2 , and Q are all measures of heterogeneity. Test of $\theta=0$ is a test that none of the effect sizes are significantly different from 0, and z the significance test for that statistic. See explanation of figure in the text.

Figure A1.2: Effect of public works programmes on business

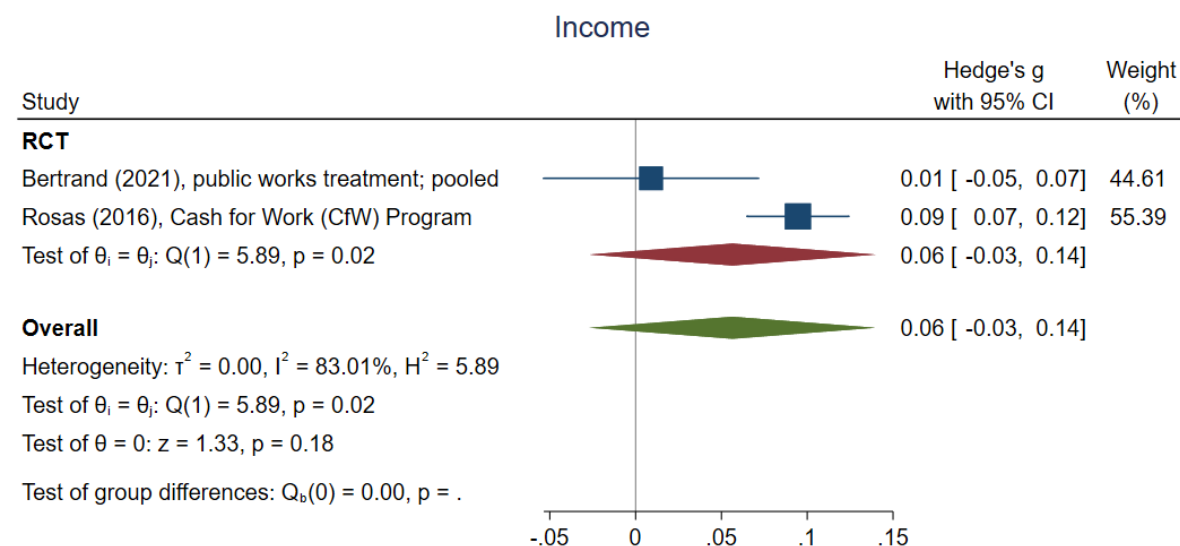


Random-effects REML model

Source: Authors' calculations.

Notes: CI = confidence interval; RCT = randomized controlled trial; p = prob value. I^2 , H^2 , τ^2 , and Q are all measures of heterogeneity. Test of $\theta=0$ is a test that none of the effect sizes are significantly different from 0, and z the significance test for that statistic. See explanation of figure in the text.

Figure A1.3: Effect of public works programmes on income

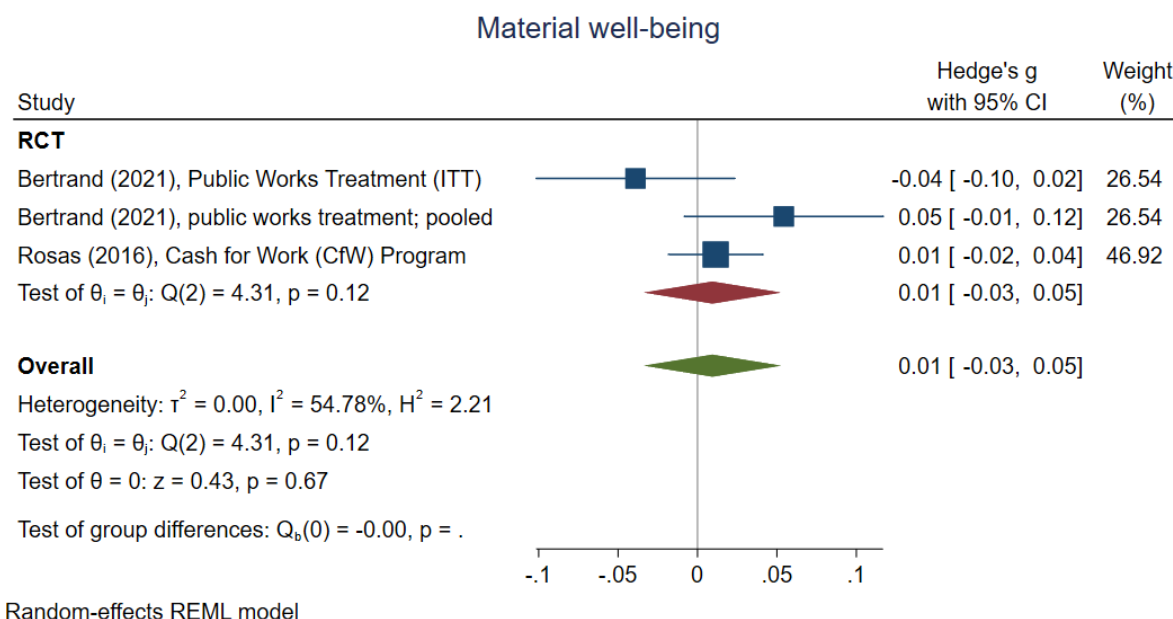


Random-effects REML model

Source: Authors' calculations.

Notes: CI = confidence interval; RCT = randomized controlled trial; p = prob value. I^2 , H^2 , τ^2 , and Q are all measures of heterogeneity. Test of $\theta=0$ is a test that none of the effect sizes are significantly different from 0, and z the significance test for that statistic. See explanation of figure in the text.

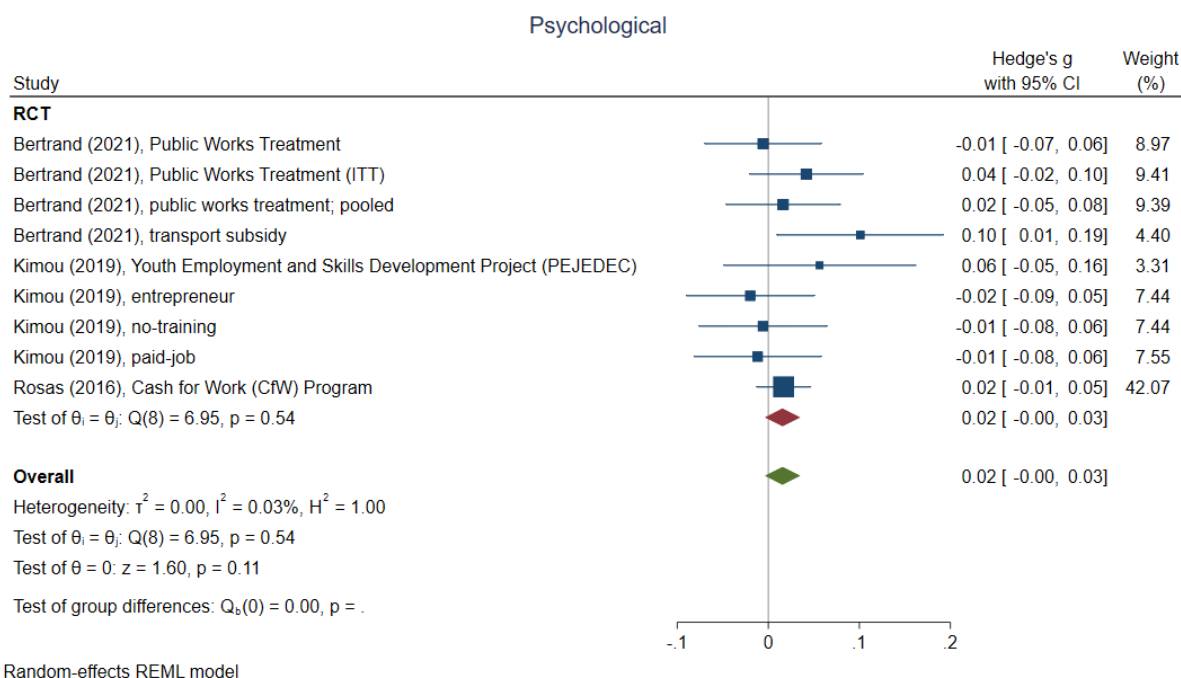
Figure A1.4: Effect of public works programmes on material well-being



Source: Authors' calculations.

Notes: CI = confidence interval; RCT = randomized controlled trial; p = prob value. I^2 , H^2 , τ^2 , and Q are all measures of heterogeneity. Test of $\theta=0$ is a test that none of the effect sizes are significantly different from 0, and z the significance test for that statistic. See explanation of figure in the text.

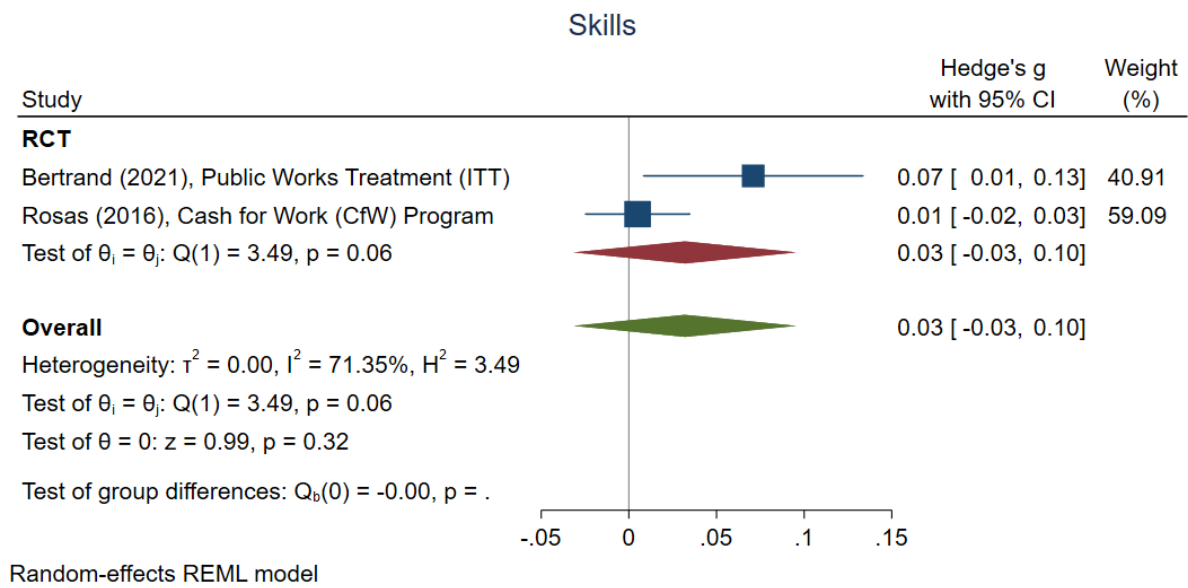
Figure A1.5: Effect of public works programmes on psychological skills



Source: Authors' calculations.

Notes: CI = confidence interval; RCT = randomized controlled trial; p = prob value. I^2 , H^2 , τ^2 , and Q are all measures of heterogeneity. Test of $\theta=0$ is a test that none of the effect sizes are significantly different from 0, and z the significance test for that statistic. See explanation of figure in the text.

Figure A1.6: Effect of public works programmes on youth skills



Source: Authors' calculations.

Notes: CI = confidence interval; RCT = randomized controlled trial; p = prob value. I^2 , H^2 , τ^2 , and Q are all measures of heterogeneity. Test of $\theta=0$ is a test that none of the effect sizes are significantly different from 0, and z the significance test for that statistic. See explanation of figure in the text.

Annex 2 Critical appraisal

Critical appraisal assesses the confidence we can have in study findings, being classified as high, medium or low. The results of the critical appraisal inform the overall confidence we have in the findings reported in the technical report.

Table A2.1: Critical appraisal of included studies

	Study design	Confidence
Bertrand et al. (2021)	Impact	High
Kimou et al. (2019)	Impact	Low
Arowolo (2012)	Process	Low
Borino and Saget (2019)	Process	Low
ITAU Auditors Ltd. (2013).	Process	High
Karuga (2012)	Process	Medium
Krstanovski (2019)	Process	Low
Mileiva and Abbott (2019)	Process	Medium
Motola and Ngandu (2019)	Process	Low
Shumba et al. (2019)	Process	High

Table A2.2: Threshold values for critical appraisal

		No. of included studies for effect estimate		
		5 or less	6-9	10 or more
Study critical appraisal assessment	Mainly Low	Low	Low	Low
	Medium	Low	Medium	Medium
	Mainly High	Low	Medium	High

Mainly low = At least 60% of studies are rated low

Mainly high = At least 60% of studies are rated high

Medium = any estimate not covered by the above two categories

Adjustment for heterogeneity: reduce by one level if $I^2 > 80\%$

Process evaluations: there are eight qualitative studies, of which 2 are high confidence, 2 medium and 4 low.

Application to this report

Reported effect sizes are all from a single study so all are low confidence.

Confidence in qualitative findings (process evaluations): Medium