CDC's methodology for measuring indirect employment changes

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Job creation is indisputably a core development priority

- DCED's work – from this year's reader and the sessions in 2014 - shows how complex results measurement can be in enterprise development.
- Jobs have the advantage of being both relevant and measurable.

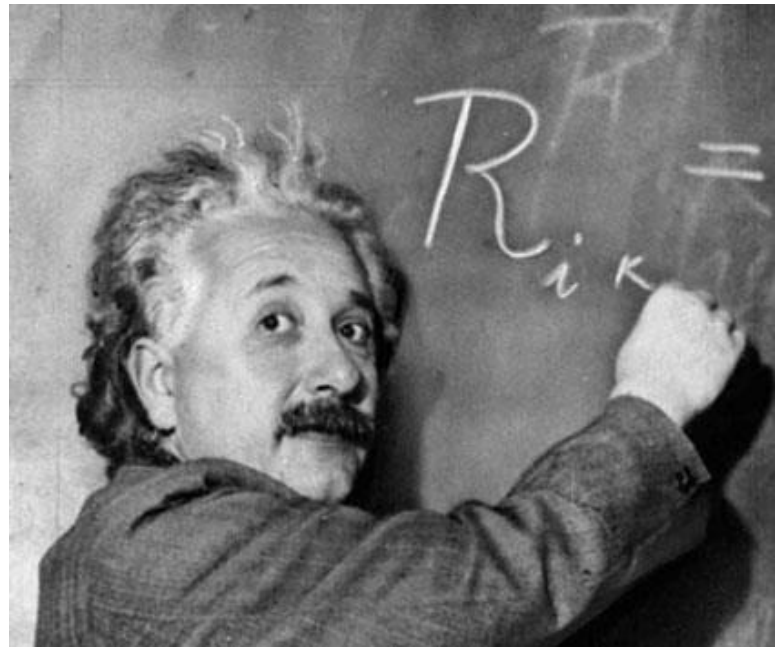
GOAL 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

- In CDC's case, this is enshrined in our mission to support the building of businesses throughout Africa & South Asia to create jobs and make a lasting difference to people's lives in some of the world's poorest places.

Measuring jobs is not straightforward - but workable approaches are possible

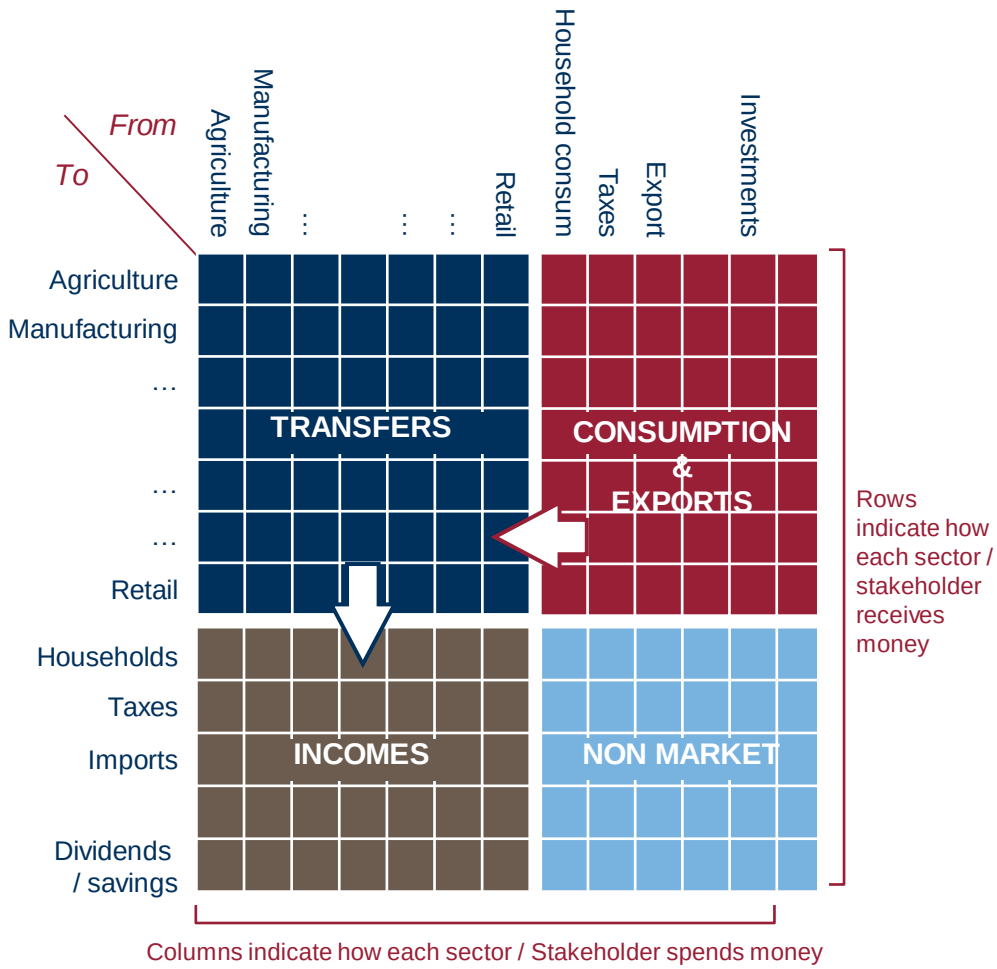
- Different concepts as to what constitutes a job: direct employment not the full picture (IFC 2013; WDR 2013).
- Through economic linkages, the employment effect is likely to include:
  - *Indirect* jobs in the value chain
  - *Induced* jobs due to increased incomes generated
  - *Economy-wide* effects if binding constraints are removed
- Our goal is to measure these three effects using as simple a methodology as possible. But no simpler.
  - Not the only approach
  - Not without limitations or critics
- The methodology is, we believe, directionally correct and appropriate for *ex-ante* assessment and *ex-post* monitoring of large portfolios but limited data.



"It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience."

Albert Einstein, Oxford lecture, 1933

Social Accounting Matrices are the engine of the methodology



CONSUMPTION & EXPORTS

of company outputs lead to

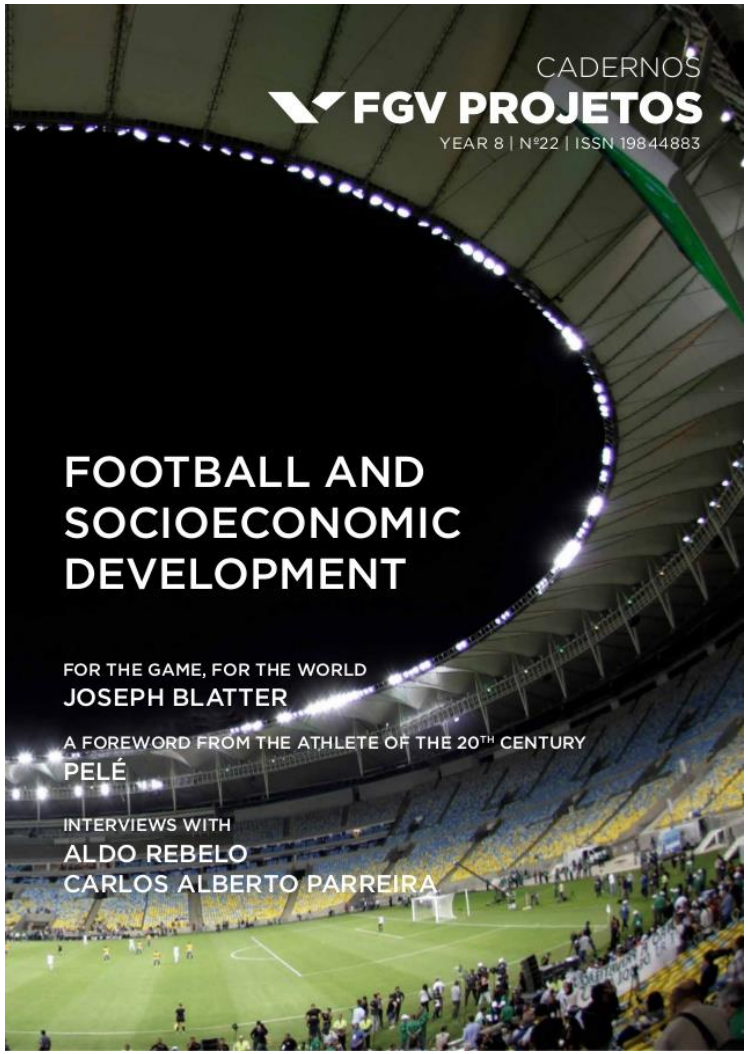
TRANSFERS

of money between sectors leading to

INCOMES

for households, governments and companies

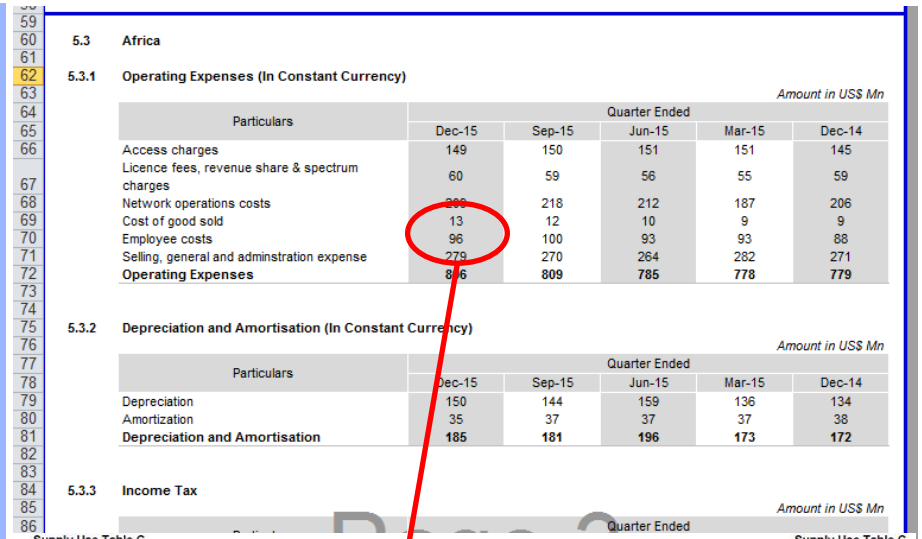
Comparable methodologies have been used by many companies and projects



- Dating back to Wassily Leontiev's classic *Input-Output Economics* (1966), the range of applications steadily expanded from the USSR and then USA.
- Widely used in economic policy and trade negotiations (eg GTAP).
- More recently, used by multinationals like Standard Chartered, and by flagship projects like the Olympics.
- Steward Redqueen among the leading consulting firms adapting methodology for use in development countries and for development finance institutions.

CDC's job creation methodology is a lean approach

- Hybrid methodology combining company accounts & national data.
- Regions covered: North Africa, East Africa, Central Africa, West Africa, South Africa, Nigeria, Kenya, South Africa & India.
- Company accounts:
  - direct employees,
  - Employee costs (wages),
  - cost of goods sold (COGS)
  - MWh & US$ of loans
- Macro-economic data:
  - Input-Output / SAM tables (GTAP),
  - Employment intensities,
  - Capital-to-Output ratios,
  - Local sourcing factors &
  - Electricity data



5.3 Africa

5.3.1 Operating Expenses (In Constant Currency)

Amount in US$ Mn

Particulars	Quarter Ended				
	Dec-15	Sep-15	Jun-15	Mar-15	Dec-14
Access charges	149	150	151	151	145
Licence fees, revenue share & spectrum charges	60	59	56	55	59
Network operations costs	[illegible]	218	212	187	206
Cost of good sold	13	12	10	9	9
Employee costs	96	100	93	93	88
Selling, general and adminstration expense	279	270	264	282	271
Operating Expenses	**8[illegible]6**	**809**	**785**	**778**	**779**

5.3.2 Depreciation and Amortisation (In Constant Currency)

Amount in US$ Mn

Particulars	Quarter Ended				
	Dec-15	Sep-15	Jun-15	Mar-15	Dec-14
Depreciation	150	144	159	136	134
Amortization	35	37	37	37	38
Depreciation and Amortisation	**185**	**181**	**196**	**173**	**172**

5.3.3 Income Tax

Amount in US$ Mn

Quarter Ended

Supply Use Table C
Intermediate consumption matrix 2011
(in billion Frw)

Product description	Code based on ISIC Rev.4	Inter-mediate demand	Agriculture & fishing	Mining & quarrying	Food manufacturing	Beverages & tobacco	All other manufacturing	Electricity, water, etc	Construction	Trade & transport	Hotels & restaurants	Public administration	Education & health	All other services
			A	B	CA	CB	CX	D,E	F	G,H	I	O	P,Q	X
ALL ACTIVITIES at basic prices		**2,444**	**83**	**4**	**227**	**199**	**194**	**56**	**460**	**265**	**211**	**264**	**161**	**281**
Food crops	A1	294	24		94	139	6				30			
Export crpos	A2	31	6		23						0	2	0	0
Livestock & livestock products	A3	62	2		58						2			
Forestry	A4	27			2	0	21			0	3	0	1	0
Fishing	A5	1									1			
Mining & quarry products	B0	59					2		57					
Manufactured food products	C1	57	1		25	14					16			
Beverages & tobacco	C2	119				7					111			
Textiles, clothing & leather goods	C3	32	1				22			0		2	0	7
Wood, paper & printing products	C4	66		0	0	1	26	0	17	1	3	7	5	5
Petroleum products	C51	189	10	5	2	9	8	28	21	78	7	5	3	13
Chemicals, rubber & plastic products	C5X	188	26	5	2	9	37	2	28	17	1	3	53	5
Non-metalic mineral products	C6	109		3		2	4	1	92	5	0		0	2
Metal products, machinery & equipment	C7	268	2	19	2	4	40	4	119	22	2	2	5	49
Furniture & other manufactured products	C8	3		-0	-0	-0	-1	-0	-1	-1	-0	8	4	-6
Electricy	D0	33		0	3	3	6	3	1	2	4	5	2	6
Water & waste management	E0	7			2	1	0	0	0	1	1		1	1
Construction	F0	57		1	0	0	1	5		3	1	18	3	25
Maintenance & repair of motor vehicles	G1	32		1	1	1	1	1	6	10	2	1	1	5
Wholesale & retail trade	G2	10												10
Transport services	H	109		1	4	0	2	0	3	63	1	14	4	17
Hotels & restaurants	I0	48			0	1	2	0	0	2	32	5	5	
Publishing & broadcasting services	J1	[illegible]		-0	-0	-0	-0	0	-0	-0	-0	4	6	0
Telecommunication	J2	82	7	1	1	2	3	8	8	11	2	4	7	29
Information technology services	J3	[illegible]	0	0	1	1	1	0	3	1	1	1	1	2
Financial services	K0	93		2	1	1	3	0	15	13	12	4	12	31
Real estate	L0	58		1	0	0	3	0	2	10	4	7	4	26
Professional, scientific & technical services	M0	177	0	1	1	3	2	1	43	3	0	86	21	15
Administrative & support services	N0	125			2	0	3	2	42	6	4	54	1	11
Public administration & defence	O0	11	0	0	1	1	1	0	2	1	1		0	2
Education	P0	21			0		1	0	0	2	0		8	10
Human health & social work	Q0													
Arts, entertainment & recreation	R0	4									-0	4	0	
Other personal & community services	S0	1		1			0							0
Spending by residents abroad	V1	48		2	0	0	2			16	0		15	12

Source: National Institute of Statistics of Rwanda

Supply Use Table C
Intermediate consumption matrix 2011
(in billion Frw)
Source: National Institute of Statistics of Rwanda

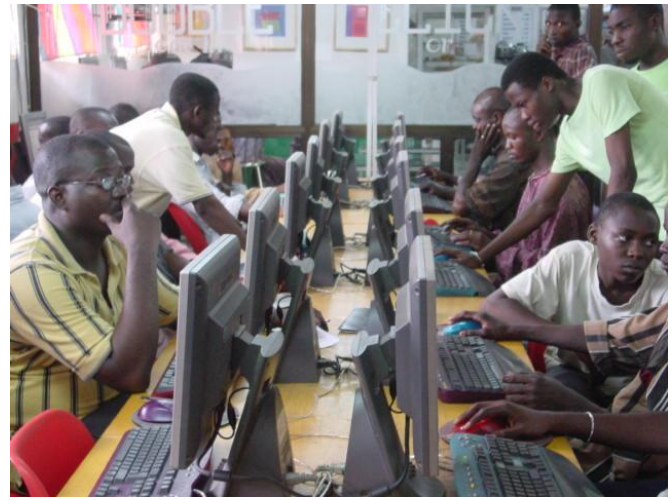
Worked example: a broadband business, Nigeria

	2014	2013
Revenue	$ 49,796,000	$ 32,400,000
COGS	$ 25,980,000	$ 20,100,000
Wages	$ 4,000,000	$ 3,500,000
EBITDA	$ 19,816,000	$ 8,800,000
Employees (FTEs)	271	243

Supply chain multiplier		Jobs per $1m	2014	2013
Nigeria	Communications	*53*	1,377	1,065

Local wages multiplier		Jobs per $1m	2014	2013
Nigeria	Communications	*23*	212	186

Total jobs effect	2014	2013
Direct	271	243
Supply chain	1,377	1,065
Wages	212	186
Total	**1,860**	**1,494**



Results across CDC's portfolio

- Methodology applied to 388 businesses in CDC's Africa & South Asia portfolios, across funds, direct equity & debt investments (80% coverage).
- These businesses supported over 11.3 million workers & livelihoods, employed directly and supported indirectly & economy-wide.
- 1.3 million net new jobs & livelihoods were created.
- For a sample of 15 businesses, sales grew 15%, COGS grew 19%, while wages trailed at 10%.
- Every business grows in its own way and so has its own unique employment footprint. The drivers of total employment impact are only loosely correlated.

	Revenue growth	*EBITDA growth*	*Wages growth*	*COGS growth*	*Workforce growth*
Revenue growth	1				
EBITDA growth	0.59	1			
Wages Growth	0.52	-0.09	1		
COGS growth	0.69	0.23	0.40	1	
Direct job creation	0.38	0.33	0.29	0.03	1

Indirect employment ratios: results for 10 firms

Ratios per direct worker	Direct workers	Supply chain jobs	Induced jobs from wages
			
Sample (n=10)	1	18.6	6.2
Small & medium (n=5)	1	11.3	3.0
Large (n=5)	1	25.9	9.4

- Looking at 10 firms across 4 sectors, for every directly employed worker, 18-19 supply chain jobs are supported, and a further 6 jobs and livelihoods induced from wages.
- Large firms may have a bigger indirect employment footprint (more raw materials, higher wages?)
- These numbers do not take into account the economy-wide impact of increased electricity supply and provision of loans by financial institutions. Here, the economy-wide jobs impact can be several times bigger.
- We are currently evaluating the impact of electricity on job creation in Uganda and about to examine the impact of bank lending on SME job creation in India.

Challenges for the 2018 seminar

- Attribution
  - – Investor's stake in the business (debt vs equity)
  - –Role of management & workers
  - –Displacement among competitors
- Updating SAMs to GTAP 2011
- Understanding economy-wide elasticities of electricity and infrastructure to GDP
- Job quality
  - –Health & safety
  - –Wages
  - –Gender & youth breakdown
  - –bottom 40% of income distribution
- *Ex-post* validation in field studies
- Consistency with other development partners using similar approaches
- Ultimately, it's always about real people's livelihoods