INVESTING IN THE CARE ECONOMY

A STEP-BY-STEP GUIDE FOR MEASURING GAPS, COSTS, AND RETURNS ON INVESTING IN CARE SERVICES SECTORS

© UN Women 2026.

This work is available open access by complying with the Creative Commons license created for inter-governmental organizations, licensed under CC BY-NC-ND 3.0 IGO.

https://creativecommons.org/licenses/by-nc-nd/3.0/igo/

Publishers must delete the UN Women logo from their edition and create a new cover design. Publishers should email the file of their edition to: permissions@unwomen.org.

Photocopies and reproductions of excerpts are allowed with proper credits.

Produced by UN Women, New York, March 2026.

The views expressed in this publication are those of the author(s) and do not necessarily represent the views of UN Women, the United Nations or any of its affiliated organizations.

Please cite this publication as: UN Women. 2026. *Investing in the Care Economy: A step-by-step guide for measuring gaps, costs, and returns on investing in care services sectors.* USA.

INVESTING IN THE CARE ECONOMY

A STEP-BY-STEP GUIDE FOR MEASURING GAPS, COSTS, AND RETURNS ON INVESTING IN CARE SERVICES SECTORS

Economic Empowerment Section
UN Women

New York, 2026

ACKNOWLEDGEMENTS

This policy tool has been developed within the framework of the UN Women programme, “Transformative Approaches to Recognize, Reduce and Redistribute Unpaid Care Work”, with generous financial support from the Government of Germany. It has been developed by Professor Ipek Ilkkaracan, Professor of Economics at Istanbul Technical University (ITU), Türkiye, with overall guidance and technical contributions from Amber Parkes, Care Economy Policy Specialist, UN Women, and Brunella Canu, TransformCare Programme Coordinator, UN Women.

The tool builds on prior applied studies which simulate economic returns on care investments with a focus on employment creation. It brings together their main methodologies along with learnings from their application, key resources and two new optional extensions.

The previous studies this document builds on include the tool developed in 2021 by Professor Ipek Ilkkaracan, in the framework of the UN Women and International Labour Organization (ILO) global joint programme, “Promoting Decent Employment for Women through Inclusive Growth Policies and Investments in the Care Economy”, with financial support from the Swiss Development Cooperation (SDC). This document also builds on a similar methodological tool developed by the UN Women Country Office in Mexico, with the support of the Latin America and Caribbean Regional Office of UN Women (UN Women 2022).

With special thanks for the additional technical review and contributions from Astha Bhatta, Bazlul Khondker, Beatriz Garcia, Lamia Rhoufrani, Lourdes Colinas, Mamadou Bobo Diallo, Priti Shrestha, and Raquel Coello.

Editing: Jane Garton

Design and layout: Oliver Gantner

TABLE OF CONTENTS

INTRODUCTION 7

PART A – BACKGROUND AND KEY PLANNING STEPS 9

1. THE POLICY TOOL AT A GLANCE 10

2. THE CARE ECONOMY: DRIVING PROSPERITY AND WELL-BEING 11

3. PURPOSE, USES AND SCOPE OF THE POLICY TOOL 14

3.1 Purpose and uses of the tool 14

3.2 Scope – what the tool does and doesn't do 17

4. OVERVIEW OF KEY STEPS AND CONSIDERATIONS 20

4.1 Planning and preparation 20

4.2 Determining the objective, focus and scope of analysis 22

4.3 Establishing the implementation team 24

4.4 Undertaking context analysis 24

4.5 Considering how findings will be shared post-analysis 25

PART B – APPLYING THE TOOL 27

5. METHODOLOGY OVERVIEW 28

5.1 Assessing coverage gaps in care services – overview 28

5.2 Estimating the costs of eliminating coverage gaps – overview 31

5.3 Contextualizing costs within the fiscal and macroeconomic policy framework 33

6. COVERAGE GAPS AND COSTS IN EDUCATION 34

6.1 Assessing coverage gaps in early childhood care and education 34

6.2 Assessing coverage gaps in primary and secondary education 36

6.3 Estimating the costs of closing coverage gaps in education 37

7. COVERAGE GAPS AND COSTS IN HEALTHCARE SERVICES 40

7.1 Assessing coverage gaps in healthcare 40

7.2 Estimating the costs of closing coverage gaps in healthcare 41

8. COVERAGE GAPS AND COSTS IN LONG-TERM CARE 43
8.1 Assessing coverage gaps in long-term care 43
8.2 Estimating the costs of closing coverage gaps in long-term care 45
9. ASSESSING THE RETURNS ON INVESTMENTS IN CARE SERVICES 47
9.1 Employment creation 49
9.2 Tax revenues and fiscal sustainability 53
9.3 Distributional analysis and impact on poverty reduction 54
9.4 Macro modelling to estimate impact on growth and other macroeconomic indicators 56
10. OPTIONAL EXTENSIONS TO THE ANALYSIS 57
10.1 Comparing returns on investment in care versus other sectors 57
10.2 Climate implications of public investment – analysis of carbon impact 58
PART C – ANNEXES 61
ANNEX 1: RECENT CARE POLICY FRAMEWORKS AND RESOLUTIONS 62
ANNEX 2: ASSESSMENT OF ECONOMIC RETURNS – SUPPLY-SIDE STUDIES 63
ANNEX 3: REVIEW OF APPLIED POLICY SIMULATIONS 65
ANNEX 4: RESOURCES TO SUPPORT APPLICATION OF THE TOOL 70
ANNEX 5: MACRO MODELLING– ALTERNATIVES TO IO ANALYSIS 72
ANNEX 6: COSTINGS FORMULAE 74
ANNEX 7: TEMPLATE FOR PRESENTATION OF RESULTS 80
REFERENCES 86
ENDNOTES 88

BOXES, FIGURES AND TABLES

Box 1 — What are care services? 10
Box 2 — Prioritizing preschool in Morocco 12
Box 3 — Investment in care services for decent employment creation and green jobs – overlapping policy agendas 13
Box 4 — Findings from the application of the first edition of this policy tool 16
Box 5 — Public investment and expenditures as a countercyclical macroeconomic tool 19
Box 6 — Checklist – key questions to guide preparatory work 26
Box 7 — OECD data on Greenhouse Gas Footprints Indicators 59

Figure 1 — Economic returns on investing in the care economy – supply- and demand-side channels 18
Figure 2 — Key steps in planning and applying the policy tool 21

Table 1 — Overview of how to assess care coverage gaps 29
Table 2 — Steps in costing the care coverage gaps 31
Table 3 — Setting policy target enrolment rates in education (%) 36
Table 4 — Setting policy targets on service and employment quality in education (%) 37
Table 5 — Data requirements for assessing the care coverage gaps and costing in education 38
Table 6 — Data requirements for assessing the care coverage gaps and costing in healthcare 42
Table 7 — Data requirements for assessing LTC coverage gaps and costing 46
Table 8 — Data and skills requirements for estimating economic returns on investment 47
Table 9 — Assessing economic returns on investing in care – summary of methodologies and data 49
Table 10 — Overview of microsimulation for distributional analysis 55

ANNEXES

Box A6.1 — Assessment of care services coverage gaps 74
Box A6.2 — Estimation of the costs of eliminating care services coverage gaps 75
Box A6.3 — Estimation of coverage gaps in education 75
Box A6.4 — Estimation of the costs of eliminating coverage gaps in education 76
Box A6.5 — Estimation of the coverage gaps and costs of eliminating coverage gaps in healthcare services 77
Box A6.6 — Estimation of coverage gaps and costs of eliminating coverage gaps in long-term care (LTC) services 78
Box A6.7 — Estimation of total employment creation (direct, indirect and induced employment) 79

Table A2 — Studies on supply-side effects of investing in care services 64
Table A3 — Applied demand-side studies on investing in care services 66
Table A4 — Country reports on pilot applications of the UN Women-ILO policy tool 71
Table A7.1 — Profile of the study in (country or province/region) 80
Table A7.2 — Simulation scenarios and policy targets 81
Table A7.3a — Assessment of care deficits, costs and employment generation 82
Table A7.3b — Sample presentation of results – assessment of care services coverage gaps, costs and employment creation in Türkiye 84

INTRODUCTION

Care is fundamental to the well-being of people, communities, economies and eco-systems. However, the current organization of care systems in most countries around the world is characterized by significant care deficits and inequalities among both care receivers and care providers.

For example, the vast majority of young children do not have access to early childhood development and education prior to school entry. In some contexts, universal access to primary and secondary schooling is not guaranteed. Meanwhile, the need for long-term care is growing, given demographic trends, yet the level of public and private family/community support for older persons is hardly sufficient to meet existing needs let alone respond to increasing demands in the near future.

Further, most countries do not have a well-developed system to respond to care and support needs for persons with disabilities. There are significant gaps in access to quality healthcare around the world, including in the Global North, with shocks such as the Covid-19 pandemic revealing underlying deficiencies in many healthcare systems.

It is now increasingly recognized that there is a critical and urgent need to scale up investments in the care economy to enable gender equality, economic prosperity and social well-being (see Annex 1). The expansion and upgrading of care services sectors including early childhood care and pre-school education, care and education of children of school age, healthcare, long-term care and social services, are key components of investing in the care economy.

For many policymakers, the key questions that remain are: *Where to invest? With what outlays? What are the returns on investment?*

This document provides policymakers and advocates with a methodology to generate data to answer these questions. In doing so, it supports evidence-based policy design and budgeting by allowing users to assess the rationale for increased public spending on care services expansion in view of the substantial economic and social returns.

This policy tool aims to support the operationalization of global, regional and national normative and policy frameworks on care, with a particular focus on public investments in care services sectors.

The document is organized into two main sections. **Part A** provides background information and the rationale for applying the tool, together with an overview of the key steps and considerations for the planning and dissemination stages. It is primarily designed to support managers who will be commissioning or overseeing the application of the policy tool. **Part B** provides a step-by-step methodology to apply the tool and generate estimates of coverage gaps in care services, the costs of eliminating these coverage gaps, and the returns on public investments in care services. This section is primarily designed to support researchers undertaking the analysis.

PART A

BACKGROUND AND KEY PLANNING STEPS

1. THE POLICY TOOL AT A GLANCE

What is it? This tool provides a methodology to undertake an analysis of the coverage gaps in paid care services, the costs of eliminating the coverage gaps, and the returns on public investments in care services. The social and economic returns that can be estimated include decent job creation, a reduced gender gap in employment, increased tax revenues and earnings, and poverty reduction, along with positive impacts on macroeconomic indicators such as economic growth. The tool also provides two optional extensions to the analysis, namely: i) the returns on public investment in care services compared to other sectors, and ii) the greenhouse gas emissions resulting from investment in care services sectors as compared to other sectors.

Why use it? The tool helps generate evidence to support policymakers in making the case for public investments in the care economy, specifically in care services. It supports evidence-based policy design and budgeting by allowing users to present the rationale for increased public spending on care services expansion in view of the economic and social returns.

Who should use it? The intended users include policymakers and practitioners whose portfolios directly or indirectly cover gender equality, employment, macroeconomics, the care economy, social and economic well-being, and climate change. It supports managers and practitioners who are interested in commissioning an evidence-based study on the tool's focus areas, and the experts and researchers who will conduct the study.

How to use it? The tool can be applied at the national or sub-national level. Users can choose to focus the analysis on one type of care service, e.g. early childhood care and education (ECCE), or select several types of care services, according to public policy priorities.

When to use it? The tool can be applied at any stage of the policymaking and budgeting process. The insights can be used to inform or operationalize a strategy or policy, e.g. on the care economy, gender equality or economic development, or to set fiscal policy priorities and budget allocations.

BOX 1

What are care services?

Care services can be paid or unpaid. Paid care services are in several sectors, including ECCE, education and care of school-age children, healthcare, long-term care for older persons and persons with disabilities, social services, domestic services and personal services. They can be provided as centre-based or home-based, and can be accessed as day-based care or residential (live-in) care. Care services entail both formal and informal employment. Quality and affordable care services are critical for enabling the receipt of quality care for those who require it, and more equitably redistributing the responsibility for unpaid care work between households, the state and the market, and between women and men.

2. THE CARE ECONOMY: DRIVING PROSPERITY AND WELL-BEING

Care is essential for daily functioning, human development, individual and social well-being, and economic productivity. Ensuring universal access to quality care services is a central intervention area for building transformative care systems to achieve gender equality and enable economic transformation that benefits all of society.

However, as families stretch time and material resources to continue caring to the best of their ability, family caregivers – predominantly women and girls – absorb the full costs of care provisioning in the form of lack of access to time for self-development, education, employment, income-earning and self-care. Underdeveloped care systems put the well-being of both care receivers and care givers at risk. They also have detrimental repercussions for the economy at large by creating a vicious cycle of poverty, increasing intersectional inequalities in incomes and well-being, raising the costs of social protection systems, decreasing productivity, and acting as a major impediment to creating an inclusive and sustainable economic and social order.

In the post-pandemic context, the widening and deepening of existing care deficits has facilitated greater awareness of unmet care needs and demands, and the consequences of failed care systems for well-being and the overall economy. This has resulted in increased interest in the care policy agenda, particularly at multilateral and regional levels, with numerous policy documents released and resolutions adopted in recent years (see Annex 1).

A crucial policy intervention area entails public investments in the expansion and upgrading of care services sectors, namely education (including early childhood development and preschool education), healthcare and social services (including long-term care). Building a care services infrastructure that provides universal access to quality care requires substantial resources. It also faces the challenge of fiscal constraints, particularly in some low-income country contexts, requiring identification of multiple innovative financing schemes. In other contexts, fiscal constraints rest more on lack of political commitment, characterized by care- and gender-blind spending priorities in public budget decisions. Hence, presenting a fiscal rationale is an important component of advocacy for investing in the care economy.

BOX 2

Prioritizing preschool in Morocco[1]

Morocco's New Development Model has made the development of preschool a central component of its early childhood policy, noting that this is "a strategic axis that can contribute significantly to the initiation of a true Moroccan educational renaissance" (Ragbi et al. 2023, p.53). The Preschool Generalization and Development Programme was launched in 2018 with the objective of achieving universal access for children aged 4 and 5 to pre-primary schooling by 2027-2028.

The programme has been noted for its success in a short period; it increased the gross pre-primary enrolment rate from 54 per cent in 2018 to 73 per cent in 2021, with a target of 100 per cent by 2027-2028. The increase of 19 percentage points in the gross enrolment rate over a span of three years indicates that rapid progress is possible when there is political will and resource allocation.

Beyond expansion, the programme also sets the objectives of improving quality, affirmative action for rural and peri-urban areas, and integration of pre-primary education into the primary education cycle (Ragbi et al. 2023, p.55). The number of educators is set to increase from 51,000 to 504,000 by 2027-2028.

Recent studies exploring the economic returns on public investments in care services expansion demonstrate that there is a strong short- and long-run fiscal rationale for allocation of resources towards building comprehensive care systems, beyond the better-acknowledged social returns (see Annex 3 for a summary review of these policy simulations). The studies present a fiscal argument for investing in care services sectors based on the following findings:

- Public investment in care services can act as a strong driver of direct and indirect employment creation and earnings generation, given the high employment multipliers of care services sectors.
- The labour demand emerging from care services expansion benefits both women and men, but particularly favours women's employment given the overrepresentation of women in the care sector. Hence it helps narrow the gender employment gap through labour demand-side mechanisms. This is in addition to the positive impact that access to quality care services has on women's labour supply by reducing the time women spend on unpaid care work.
- The substantial employment creation and earnings generation of public investments in care services also imply that there will be a substantial return of income for the state via taxes and contributions in the short run, hence underlining the self-financing potential of care services expansion in the short run. This is in addition to the longer-run positive impact on tax revenues through improved productivity, as well as lower social protection and healthcare expenditures due to poverty alleviation and improved well-being of care receivers.

This assessment of returns on public investments in care services sectors helps to connect advocacy for investment in the care economy to macro-economic policy debates on the role of fiscal policy and composition of fiscal expenditures in stimulating an inclusive and sustainable economic recovery.

The care policy agenda overlaps with the progressive macroeconomic policy agenda, which emphasizes the importance of creating decent employment, and with the green economy agenda, given that care services jobs can also be considered low-carbon or 'green' jobs (see Box 3).

BOX 3

Investment in care services for decent employment creation and green jobs – overlapping policy agendas

It has long been acknowledged that fiscal policy can serve as an effective tool to alleviate inequalities while at the same time boosting aggregate demand and growth through job creation.[2] An emerging debate on macroeconomic policy points out that choices on the sectoral allocation of spending made in public investment and expenditure allocations, and in stimulus packages (or austerity cuts), have strong implications for the magnitude and composition of emerging labour demand. This is due to differential employment multipliers across sectors, as well as the varying composition of employment by gender and skills.

Care service sectors are substantially more labour intensive than, for example, construction (a common target of stimulus spending) or most other service sectors. Also, the composition of labour demand in care services tends to favour women above men, while the reverse is true for many other sectors, such as construction. Care service expansion also triggers labour supply-side effects for women in particular, by alleviating constraints on their time due to unpaid care. Thus it creates a more equal basis upon which women are able to make decisions to enter the labour market.

As such, fiscal stimulus packages and targeted industrial policies supporting the expansion of health, education and other neglected care service sectors can serve as an effective strategy to strengthen aggregate demand while improving longer-term economic growth, gender equality and societal well-being.[3]

Care services sectors are also a source of green jobs, in that care jobs are local service jobs with low emissions and waste (UK Women's Budget Group 2022). Hence public investments in care services sectors have the potential to contribute to sustainable growth led by green jobs (Ilkkaracan 2023 and 2026).

3. PURPOSE, USES AND SCOPE OF THE POLICY TOOL

3.1 Purpose and uses of the tool

The policy tool responds to the increasing recognition that investments in the care economy are not only crucial for gender equality but are the foundation of thriving and resilient economies and societies. The tool focuses on investments in care services sectors (namely ECCE, primary and secondary education, healthcare and long-term care) and provides methodological guidelines for collection and analysis of data, with the aim of building a fiscal case and developing a roadmap for public investments in care services infrastructure.

Implementation of the tool at national or sub-national level aims to serve evidence-based advocacy and data-informed policy design for public investments in expansion of care services sectors (see Box 4 for findings from country-level applications of the tool).

Its three primary uses are to:

- ✓ **Put the problem of unmet demand in particular care services sectors on the policy agenda,** by highlighting the economic and social impact of lack of access on both care receivers and providers,[4] as well as the expected economic and social returns of investment in the sector.
- ✓ **Provide an assessment of the magnitude of unmet demand (care services coverage gaps) and of required public funding (the cost of closing these gaps)** as a data-informed foundation for policy discussions and design.
- ✓ **Explore the fiscal rationale for allocating public funding towards expansion of care services,** based on the costing assessment and the estimation of economic and social returns on investment in care services, focusing on employment creation and other related outcomes (see Box 5 on the case for public investment in care as a countercyclical macroeconomic tool).

The primary analysis comprises a three-part methodology to assess care deficits, estimate costs of required public expenditures to eliminate those deficits, and estimate the resulting returns on investment.

The tool also includes two secondary/optional extensions for cross-sectoral comparison and carbon emissions comparison. The methodology and optional extensions are summarized below.

The methodology is typically structured around two or more future-looking scenarios, where quantitative and qualitative targets for expansion of care services are set:

- **A 'high-road' scenario** characterized by universal coverage rates and quality targets set at ideal levels based on international standards and national policy targets.
- **A 'progressive expansion' scenario** with short-term policy objectives which represent an improvement on the current status of care services, e.g. initially targeting low-income households or marginalized groups and gradually improving towards the universal care scenario.

Three steps of the primary analysis:

1. **Identify the coverage gaps in care services** (early childhood care and preschool education, primary and secondary education, healthcare, or long-term care).
   - The focus of the target care services can be further refined to address specific user groups, such as children with learning differences within education services, or older persons with different types of care and support needs within long-term care services (LTC).
   - Applications to social services are also possible, such as social services for women and children at risk of domestic violence.[5]

Note: Coverage gaps are defined with respect to two factors: *quantity* (number of additional care receivers in, or number of additional care providers for, a given target group); and *quality* (e.g. ratio of care service receivers to providers; required skill/education levels of care providers).

2. **Assess the cost of public investments and expenditures required to eliminate care services coverage gaps**
   - The sources for financing public expenditures can include private contributions by users/households and employers, or tax revenues; this has to be explored on a context-specific basis.
   - The costing methodology considers quantity and quality coverage gaps, as well as decent work conditions for employment of paid care workers.
3. **Estimate the economic and social returns on such investments in the short and long run**
   - Estimation of potential tax revenue generation is encouraged, as it helps to identify the self-financing potential of the initial outlay of expenditures and explore the fiscal implications.
   - Estimation of other returns such as earnings generation, income distribution, poverty alleviation, and impact on growth, productivity and other macroeconomic indicators are also included. However, these are optional as their analysis depends on availability of data, human resources, time and funding.
   - Methodologies for comparison with other sectors and analysis of carbon impact are optional extensions to the assessment of economic and social returns (see below).

Note: In the estimation of returns, the tool focuses on decent employment creation and its gender composition (share of employment estimated to go to women vs. men) at the macro level.

Additional (optional) analyses

A. Cross-sectoral comparison

The methodology allows comparison of the results emerging from data analysis on economic returns on care sector investment vs. those that could be expected from public expenditure of a similar magnitude on other sectors and budget spending items. This may be useful to strengthen the argument for fiscal reallocations towards the care sectors.

B. Carbon emissions comparison

This entails analysis of the climate impact of investments in care services sectors through an estimation of greenhouse gas emissions of sectoral growth, and unveils the potential for their contribution to sustainable growth.

BOX 4

Findings from the application of the first edition of this policy tool

The first edition of this policy tool by UN Women and ILO (2021)[6] was implemented in 2022-2023 as a pilot in five countries with diverse locations and income levels: Argentina, Egypt, Ethiopia, Nepal and Morocco. The application was at the national level for all countries; for Argentina it was also applied at the sub-national level in two provinces (see Annex 4).

All studies included estimations for the ECCE sector, while two countries (Argentina and Nepal) also included primary and secondary education and healthcare services; the studies from Argentina and Egypt also covered long-term care services.

Key findings[7] include:

- All five countries showed that the outlay of public expenditures on care services contributes to providing **quality care**, and to **significant generation of decent jobs**.
- In **Ethiopia**, the employment creation potential of expanding ECCE services towards the target of universal coverage was estimated at six million new jobs, with almost two-thirds of these going to women.
- **Substantial jobs generation means substantial earnings generation**, with positive implications for tax revenues and the self-financing potential of care investments.
- In **Egypt**, the analysis showed that an expansion of childcare services costing 4.5 per cent of GDP has substantial self-financing potential through the generation of direct and indirect tax revenues.
- In **Morocco**, the tool was applied through a collaboration with the Ministry of Finance, building on an existing national policy agenda on improving preschool education for 4-5 year olds towards universal coverage. The findings were also used to inform the development of the Moroccan New Development Model and 2022 National Gender Report (see Box 2).
- In **Nepal**, the study found strong multiplier effects on GDP growth, estimating that increased government spending on ECCE towards universal coverage has the potential to increase GDP by 1.2 per cent over its base value. Application of the tool resulted in the creation of a national multi-sector steering committee on the care economy.
- In **Argentina**, province-level applications highlighted the **importance of looking beyond ECCE, healthcare and LTC** to also assess care services coverage gaps in social services for specific groups, such as mental health and social services for survivors of gender-based violence, and social services for transitional care of children without parental care.

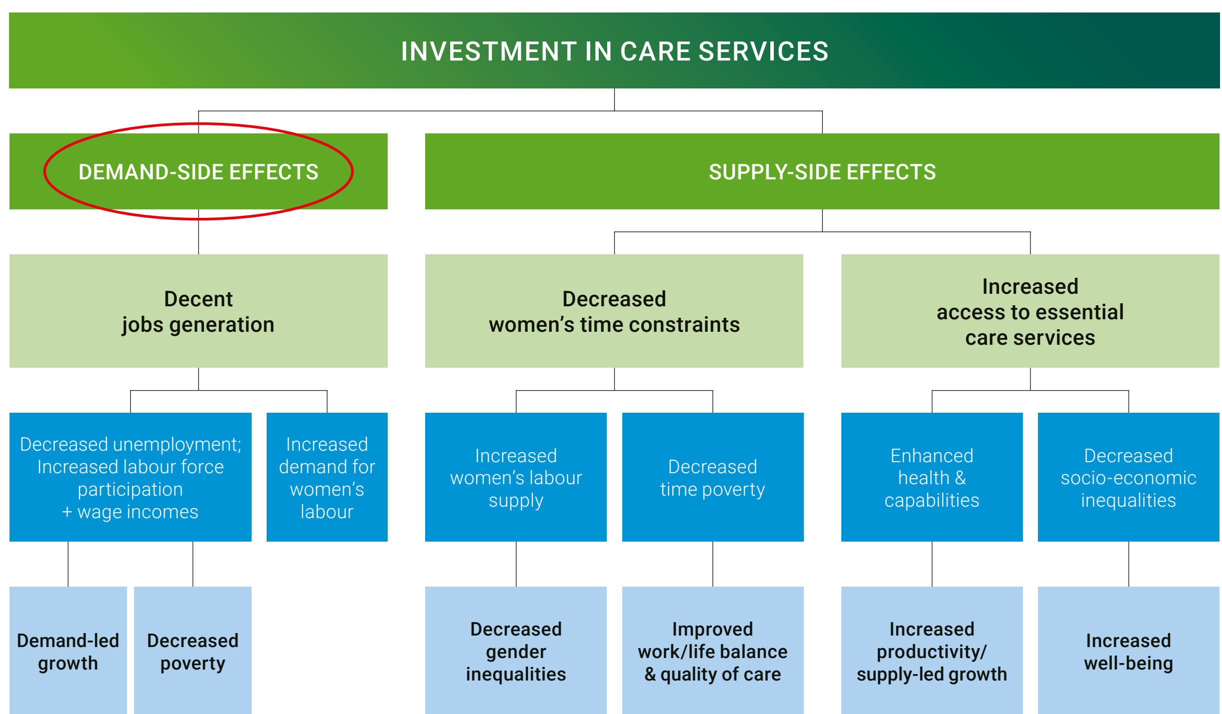
3.2 Scope – what the tool does and doesn't do

- **The tool focuses on care services** (see Box 1). Universal access to quality care services is a central intervention area for building transformative care systems, as described above, but is only one of the various components of a comprehensive care policy framework. Other areas, such as time- and labour-saving physical infrastructure, care insurance schemes, labour market regulation policies for care-friendly employment practices and decent work conditions, and coordination across the entire system for policy coherence and effectiveness are also important, but are outside the scope of this tool.
- **The tool focuses on public investment**[8] in care services sectors at national or sub-national level. Sources of funding and modality of service provisioning are outside the scope of the tool. Depending on the context, service provisioning can be entirely public funded or in part supported by user fees, entirely through public services, or through private sector services subsidized by public funding and monitored by public agencies. Note also that the costing calculations do not include estimates of physical infrastructure costs (such as building new ECCE centres or health clinics), as these are one-off expenditures without lasting effects on employment creation.
- **The tool has been developed primarily for 'stable' economic contexts.** However, it can be adapted to post-conflict or disaster contexts to help estimate the need for paid care services and care providers as part of recovery and reconstruction efforts.
- **The tool allows for real-time analysis in partnership with key duty bears and stakeholders, using the most current and relevant data.** While it is time-intensive, this methodology allows for the strengthening of partnerships, political will and policy agendas, and the enhancement of national capacity to support the application of key findings. In this sense, it is distinct from other simulation tools that provide instant estimates based on predefined datasets, such as the ILO's Care Policy Investment Simulator[9] and ECDAN's Cost of Inaction Tool.[10]
- **Domestic workers are not included as an area of service expansion in this tool.** Domestic workers provide paid care services and constitute an important target for policy interventions towards improving employment conditions and well-being. This policy tool focuses on public investments in institutional care services; policy interventions targeting private household employment of domestic workers are thus outside its scope. Nevertheless, service provisioning in the case of LTC services can be based on publicly subsidized and monitored formal employment of domestic workers. In the case of ECCE, the tool methodology only considers centre-based early childcare and education services.
- **Service delivery modality is not part of the methodology**. The tool's methodology is based on a scenario of direct public provisioning by central and/or local government. Alternative modalities include private or non-profit provisioning where demand is subsidized through a voucher system or taxation, and/or supply is subsidized through credit and/or taxation. The tool assumes that whatever the modality of service delivery, the state is accountable for ensuring access, affordability and quality through public financing and effective regulation, such that the substantive outcomes for care receivers and providers meet minimum standards.
- **The tool estimates the required upfront expenditures needed to close care coverage gaps but does not propose how these initial expenditures should be financed.** The question of financing sources is context-specific. How to expand fiscal space for gender equality investments, including in the care economy, through macro-level economic policies and external finance strategies, is explored extensively in policy and research literature.[11]

- **Estimation of returns on investment is limited to employment creation (and its gender composition) and the labour demand-side outcomes of employment creation**, namely: earnings generation (and its distribution), poverty alleviation, improvement of women's employment rate, tax revenue generation and GDP growth as instigated by new employment creation. Other important economic and social returns on investing in care services sectors – such as alleviation of time constraints on women's labour supply, impact on productivity and GDP growth through labour supply-side causal links, improved well-being of care receivers and care providers, and building of human capabilities – are outside the scope of this tool. See Figure 1 for an overview of economic returns on investing in the care services sector (supply- and demand-side). For information on studies that focus on the supply-side returns, see Annex 2.

FIGURE 1

Economic returns on investing in the care economy – supply- and demand-side channels



BOX 5

Public investment and expenditures as a countercyclical macroeconomic tool[12]

The case for increased public investment and spending to counteract an economic crisis is based on a Keynesian macroeconomic framework. Keynesian theory argues that the primary source of low growth and high unemployment lies in deficiency of effective demand, which in turn deters private investment. The government needs to intervene with fiscal policy (namely increasing public expenditures) in order to activate aggregate demand in the economy, boost employment and aid economic recovery. The demand activation and employment creation would not happen only in the sectors where the government spends money but also in other sectors, through what Keynes called 'the spending multiplier' effects.

Most Keynesians, however, used to approach the issue from a macroeconomic growth perspective and did not pay attention to the question of where the public expenditures should be directed; it could be spent in any manner, as long as the overall level of spending in the economy was maintained. In the long run, the theory holds, increasing effective demand by spending on capital investment is better, because it improves productivity and boosts long-run production capacity (i.e. growth).

In recent years however, some macroeconomists, including feminist economists, have increasingly emphasized that *where* spending is allocated makes a huge difference in terms of the effectiveness of the fiscal policy intervention in maintaining growth and lowering unemployment. They are critical of the human and gender bias in classifying only capital and physical infrastructure expenditures as investment expenditures; they argue that education and health expenditures are forms of human investments that also entail future productivity gains.

Hence, they interpret the case for public investment and expenditures as a countercyclical tool in a more expanded framework with significant nuances. They advocate spending on labour-intensive service sectors, such as health and education – both for their higher employment multiplier than other forms of sectoral spending, and their capacity to improve a multitude of economic and social goals, such as gender-inclusive growth and long-run productivity, through enhanced human capabilities.

4. OVERVIEW OF KEY STEPS AND CONSIDERATIONS

4.1 Planning and preparation

The following should be considered in the initial stages of planning and preparing to apply the tool:

Timeframe: The timeframe will vary depending on data availability and complexity, but it is recommended to allow at least four to six months for data collection and analysis and validation workshop(s), if the only returns to be estimated are employment creation and tax revenue generation at the macro level. Estimation of other returns, such as earnings and their distribution, impact on poverty alleviation (microsimulation modelling), impact on GDP and other macro indicators (macro modelling), impact on emissions, and comparative scenarios, may require additional time depending on the scope of the project.

Budget: Costs of implementing the tool will vary across contexts, but key items to budget for include a national consultant to undertake the analysis[13] and additional research and support staff as determined by the commissioning team, as well as data access, computing and software, transport (if travel is required), consultations with ministries and partners, design and copy editing, translation, validation workshop(s) and dissemination/policy dialogue(s).

Partners: The value of the tool is that it supports/enables a whole-of-government integrated approach. In the ideal scenario, multiple ministries and public agencies are engaged from the start rather than consulted or informed post-implementation. These include the ministries of (or agencies for) planning, finance, labour, women/equality, education, health, social services, and the statistics institute. The ministry (or agency) of planning may be best placed to lead as it is responsible for design of sectoral development plans, equipped with research capacity, and can coordinate across other ministries. The tool can be implemented in partnership with a relevant national/sub-national policy think tank, research centre or university, if appropriate for the context. If there are non-governmental organizations with relevant expertise, they can be invited as partners.

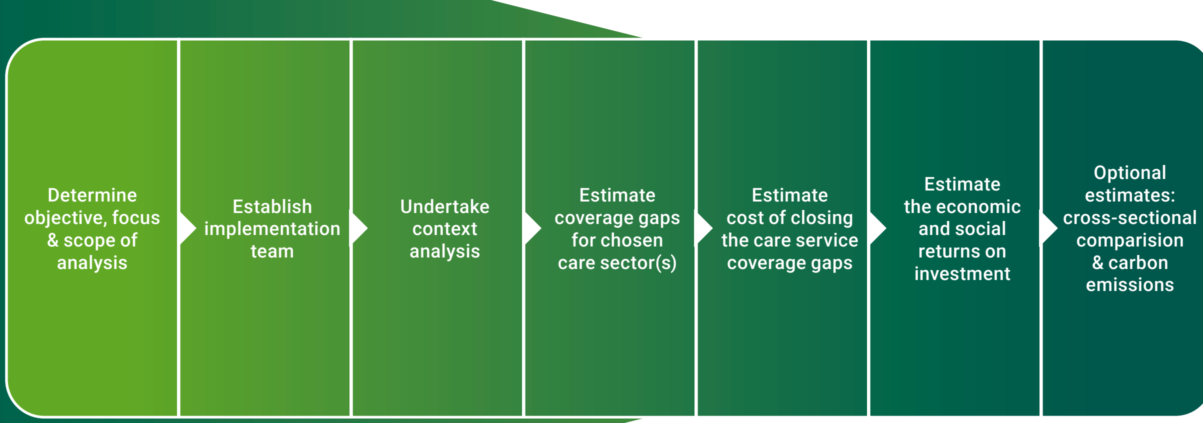
Validation: Regardless of who makes up the implementation and research team, it is essential to hold validation workshops with all relevant partners throughout the process of implementation. This enables identification of and access to data and other important inputs/feedback towards accurate analysis. It also contributes to grounding the process in the national/local context, hence building awareness, capacity and consensus around emerging policy implications.

Supplementary tools and resources: In applying the tool to a specific country context, researchers will use the methodology described in Sections 5 through 10. There are a number of supplementary methodological materials and resources that should be used in conjunction with this tool. These are:

- **Prior studies:** This tool builds on a series of prior applied demand-side studies on investing in care services sectors from a variety of countries (see Annex 3, Table A.2). It is recommended to review this list and refer to the most relevant studies, depending on the specific objectives and scope of your implementation.
- **Resources to support the implementation of the tool:** Annex 4 lists recent applications of this tool that can support the process of implementation. It is highly recommended to review these in the planning phase. Most importantly, a review of the five country reports from the pilot implementation of the first edition, and the consolidated report on the experiences and results of the pilot implementation will help develop an understanding of the methodology and its application.
- **Template for presentation of results (Annex 7):** The template contains a set of tables for organizing and presenting the results. While there can be country-specific divergences, the template aims to serve as a framework to guide clear presentation of findings and enable comparison with results from other countries.

Figure 2 provides an overview of the key steps in the planning and application of the policy tool. The preparatory steps 1-3 are discussed in detail in the following pages, along with the final step on validating and disseminating the findings (which should be considered at the planning stage). The steps on estimating care coverage gaps and costs are explained in detail in Part B.

FIGURE 2
Key steps in planning and applying the policy tool



4.2 Determining the objective, focus and scope of analysis

This first phase will help to establish the grounds for implementation of the tool by determining the purpose and scope of the analysis, which will serve as inputs in preparing the terms of reference for the national consultant and other required experts.

The purpose and scope can be determined by asking the following five questions:

1. **What is the primary objective of applying the tool?**
   Identify the primary objective of applying the tool in the political context and use(s) for the findings. This can be specific, e.g. to inform a new development plan or strategy, or general, e.g. to build buy-in and political will of a particular ministry/department. The objective will inform the overall process.

   Note: In line with defining the primary objective, it is recommended to involve the government at an early stage and identify the appropriate lead ministry and additional supporting ministries/departments.

   The rest of the questions will ideally be explored in consultations with/by the lead ministry.

2. **Which care services sector(s) should the analysis target/focus on?**
   Determine the care services sector(s) to be covered:
   - Early childhood development, care and preschool education (ECCE)
   - Primary and/or secondary education
   - Healthcare
   - Long-term care (LTC) for older persons and persons with disabilities or chronic illness
   - Decide on any further refinement of the sectors to be targeted, e.g. mental healthcare; education support/coaching services for school-age children with learning differences; after-school services for children in primary and secondary school; eldercare for people with different levels of needs (home care vs. day centre care/support); care services for people with dementia/Alzheimer's disease.

   Note: Discussions of demand for care services expansion often focus on ECCE and LTC services. However, in many low-income countries there are also important gaps in primary and secondary education as well as healthcare services. Moreover, many countries lack care services for population groups with specific care or support needs as described above. Hence the tool adopts an encompassing definition of care services and provides flexibility for its application depending on the country context.

3. **What is the geographic level of application?**
   Determine whether the tool will be implemented at national or sub-national level. Application at sub-national level may be based on different motivations, such as lack of specific types of care services in certain regions (e.g. rural or remote areas), or advocacy entry points with local governments.

Note: Estimation of indirect employment creation resulting from expansion of care services (discussed in Section 9.1.2) is based on national input-output (IO) data, which often are not available at the sub-national level.[14]

4. What will be the scope of the economic and social returns estimated?

Determine which of the following economic and social returns the analysis will estimate, in addition to direct employment creation in the target care services sector(s) and its gender distribution (see Note below):

- Indirect employment creation in other sectors to which care services sectors have backward linkages, and induced employment creation through forward linkages (and their gender distribution)
- Tax revenue generation
- Macroeconomic measures other than employment creation (such as GDP growth, productivity)
- Earnings and their distribution; impact on (income) poverty
- Time and its distribution by gender; impact on time poverty.

Note: The assessment of direct employment creation and its gender distribution is a required component of implementation of the tool. As seen in Sections 6, 7 and 8, an estimate of direct employment creation is a necessary input for the costing exercise, i.e. it is not possible to do the costing meaningfully without first estimating direct employment.

Moreover, estimation of direct employment creation (and its gender distribution) resulting from a government plan to invest in care services is the minimum basic requirement for estimation of returns on investment to complement the assessment of care services coverage gaps and costing, thus enabling coherent application of the tool. Finally, the data inputs and methodology for assessing direct employment creation are straightforward, without the requirement for particular expertise or hard-to-access data.

5. Will the analysis include more than one scenario?

Assessments of care deficits, costs and returns are based on one or more scenarios of care services expansion over a given timeline:

- **Short-run scenarios** are based on relatively modest coverage rates and quality targets (e.g. according to the government's stated targets in a development plan).
- **Longer-run scenarios** (also called the 'high-road scenario') are guided by the Sustainable Development Goals (SDGs) and typically involve universal coverage.

Determine whether the policy simulation will include multiple scenarios:

- Short-run, medium-run and universal (high-road) scenarios
- Short-run and universal (high-road) scenarios
- Universal (high-road) scenario only.

Note: It is recommended to include the universal coverage scenario as the baseline, and add additional short-run (more modest) scenarios if and when relevant to the context.

6. **Will the analysis include any of the following extensions?**
   Determine whether implementation of the tool will include either of the following two possible extensions:[15]
   - Comparison of returns on investment in care with those on other sectoral spending
   - Analysis of the impact of jobs generation on carbon emissions.

4.3 Establishing the implementation team

Implementation will typically involve the following roles:

- **Project coordinator:** Responsible for overall planning, budget, researcher recruitment, stakeholder engagement, validation and dissemination (ideally has existing relationships with relevant government counterparts and other stakeholders).
- **Lead economist researcher:**[16] Responsible for undertaking the analysis and preparing a research report to present the findings.
- **Gender policy specialist:**[17] Supports the project coordinator and economist researcher in contextualizing the findings to the national policy context, and supports validation, policy recommendations and post-assessment advocacy (ideally has existing relationships with relevant government counterparts and other stakeholders).
- **Stakeholder reference group:** Provides inputs on context and scope of analysis, supports data access, provides feedback on and validates findings. The composition of this group will vary by context, but at a minimum should include relevant line ministries and ideally be established at the outset of the research.

Note: Secondments within ministries/departments with research capacity should be considered for the role of lead economist researcher. This individual should be able to bring together, lead and manage a team of experts and researchers that collectively have the skills to enable proper implementation of the tool, and compile findings into a research report whose content is easily accessible to a diverse audience.

4.4 Undertaking context analysis

Before starting the estimation of care deficits, costs and returns, the research team should conduct a preliminary assessment of the current context. This will help provide inputs for the analysis, and contribute to an evaluation of the findings and policy implications as relevant to the specific country context.

The context analysis should consider the following:

- **Care services –** the status of care services in the relevant sub-sectors of care with respect to:
  - Legislation on who has the right to access care, and who has responsibility (national or local governments) for care provision, staffing and other quality requirements, and monitoring systems.
  - National plans and government policies; policy agenda and debates.
  - Prevailing coverage rates and employment levels, quality measures, staff wages, expenditures disaggregated by public vs. private services.
  - Existing norms, practices and standards (such as childcare being predominantly provided by grandparents, or eldercare by migrant domestic workers).

- **Labour market –** trends in employment, unemployment, labour force participation rates (and wages) by gender (and other intersectionalities, as relevant to context); policy agenda and debates.
- **Time-use patterns** by gender (and other intersectionalities, as relevant to context), with a focus on paid vs. unpaid work time; policy agenda and debates.
- **Macroeconomy –** growth and its employment generation performance; fiscal policy, public finance and spending patterns/priorities; public debt and fiscal space; other relevant macroeconomic issues; policy agenda and debates; future projections and strategies.
- **Any other context-relevant issues –** migration, war, care and gender politics, etc.

4.5 Considering how findings will be shared post-analysis

Presenting and disseminating the findings is the final stage of implementing the tool; it is included here because it is useful to consider from the outset how and to whom the results of the analysis will be communicated. Preparation for this final stage will need to take place while the data analysis is underway.

It is important to present the results as clearly as possible. *Refer to Tables A7.3a and A7.3b in Annex 7* as a guide to constructing basic tables to present findings on assessment of care coverage gaps, costs of public investments in care services sectors, and the employment creation and gender distribution outcomes. If the study includes estimations of other returns on investment, use the resources in Annexes 3 and 4 to help guide presentation of findings.

In addition to presentation of results, it is imperative to include a discussion on the policy implications of your findings and recommendations for policy-making, as relevant to the context. Again the studies in Annexes 3 and 4, as well as the UN system policy guidance on transforming care systems (UN 2024), are useful resources to guide this.

Note: The assessment of the required public expenditures for care services expansion should be situated in the current fiscal spending patterns and constraints on fiscal space. Moreover, the findings are expected to demonstrate how a care-responsive fiscal budget can contribute to inclusive growth through employment and earnings generation, and reduction of gender gaps.

Below are some key points to guide the post-assessment stage:

Communicating the findings

- Develop clear and concise communication materials to convey assessment findings, such as infographics, summary reports and fact sheets that present key findings and recommendations in an easily understandable format.
- Tailor communication strategies to reach different stakeholders. Use digital channels and tools such as storytelling through videos or podcasts to engage a broader audience, while organizing targeted workshops or meetings to engage directly with local communities and relevant organizations.
- Emphasize the use of sex-disaggregated data and gender analysis in decision-making by presenting data in a way that highlights gender-specific patterns and disparities, and incorporating gender analysis into policy discussions and decision-making processes.

Follow-up assessment and implementation

- Where feasible, practical and strategic, consider integrating the research reference group into existing national planning mechanisms such as national gender, development or economic planning working groups.
- Engage women-led civil society organizations and groups representing those who provide and receive care, including persons with disabilities, domestic workers, older persons etc., in the research process; for example, through inclusion in the reference group and/or in the consultation process, validation workshops and development of policy recommendations.
- Promote knowledge sharing and learning between cities and regions by establishing platforms for exchanging the research findings and best practices, and organizing workshops, webinars and conferences where stakeholders can share lessons learnt and innovative approaches to public investment in care services.

BOX 6

Checklist – key questions to guide preparatory work

- What are the scope and boundaries of the tool's application (e.g. national, sub-national, relevant sectors)?
- How can governments (national or local) be engaged early in the process?
- What budget considerations are necessary for the effective implementation of the tool?
- What is the expected timeframe for applying the tool?
- Who are the key partners that need to be mapped and involved in undertaking this work?
- What types of data are needed for successful application of the tool?
- How will collaboration with local institutions, UN entities, ministries and cross-ministry bodies (e.g. led by the ministry of planning and development) be structured?
- What specific profiles or skills are required to effectively apply the tool?
- How will the findings be communicated (e.g. reports, fact sheets, digital channels to reach different audiences)?

PART B

APPLYING THE TOOL

5. METHODOLOGY OVERVIEW

This section provides an overview of the methodology for assessing care services coverage gaps and the cost of closing them, and guidelines for contextualizing costs within the fiscal framework. It should be considered along with the sector-specific guidelines for applying the tool to the sub-sectors of care services: education (ECCE, primary and secondary education) in Section 6, healthcare services in Section 7 and long-term care services in Section 8.

5.1 Assessing coverage gaps in care services – overview

Identification of the care services coverage gaps comprises five stages; these are outlined, along with related data needs, in Table 1. The assessment requires gathering information on *existing supply of vs. potential demand for* care services.

Supply is reflected by the number of people in the relevant category with access to centre/institution or home-based professional care, disaggregated by public and private services, plus excess capacity (if any).[18]

The relevance of policy targets can be evaluated against:

- Current levels in the country
- Government self-stated targets, if any
- Relevant regional/cross-country coverage rates (the best or average rate in the region)
- High-performing country coverage rates
- International criteria, such as the SDGs.

TABLE 1

Overview of how to assess care coverage gaps

Step	Data needs	Comments
1. Determine policy targets	• Quantitative targets: coverage rates • Qualitative targets: care service receiver-to-provider ratios • Educational/skills qualifications of service providers; other quality indicators specific to context	Look at: • SDGs • High-performing country indicators • Regional best indicators • Government targets • International indicators by inter-governmental or specialized agencies
2. Identify current supply in terms of quantity and quality	• Current coverage rates • No. of service receivers • No. of service providers • Excess (unutilized) capacity in services (by age groups) • Care service receiver-to-provider ratios • Educational/skills qualifications of care providers; other relevant quality indicators specific to context	• To the extent data are available, disaggregate by different types of service providers, such as public vs. private vs. non-profit • Also look for trends in change in supply of services over time
3. Determine potential demand (using targets in step 1)	• Population (by age group) • Target coverage rates	Population growth trends over time and demographic projections can be included for assessing how potential demand has changed over time and is likely to change in future. For example, increasing LTC needs in the context of ageing societies.
4. Find the coverage gap (using supply vs. demand in steps 2 and 3)	Steps 1, 2 and 3 above	Difference between supply and demand: • Additional number of care receivers to be covered to achieve target coverage rates
5. Find the quality gap (using targets in step 1 and quality indicators in step 2)	• Existing and target care service receiver-to-provider ratios • Any other existing and target service quality measures	Difference between target and existing quality measures: • Additional number of care service providers required to achieve target service ratios • Other qualitative targets, such as skills upgrading of care service providers

Note: Demand at a minimum is the realized demand as reflected in the current utilization of services. Potential demand needs to be evaluated against the specified policy targets. At a maximum, demand would be universal coverage for the entire target population who potentially need a particular type of care, e.g. universal access to childcare for children under the mandatory school age. More narrowly defined, demand estimation could be made with respect to certain criteria relevant to the country context, e.g. the best coverage rates in the region.

The following points should be kept in mind when calculating coverage gaps:

Short- vs. long-run policy targets: Short-run policy targets can limit coverage to disadvantaged households and regions,[19] both in terms of service delivery and employment creation. Nevertheless, ideally the long-run policy target should be universal coverage by direct public provisioning or public subsidized services.

Care services coverage gap: This reflects the difference between estimated potential demand and current supply; or, more explicitly, the number of potential care receivers who would need to be covered by service provisioning in order for the country to achieve the policy target, minus the number of care receivers who already have access to services. This yields the number of additional care places to be created for the assessed need to be met. *See Annex 6, Box A6.1, equations 1a and 1b.*

Care service quality gap: It is also possible to identify the care coverage gap with respect to quality of the existing level of services. This is relevant if and when existing service provisioning is assessed to fall short of certain quality requirements.

- This tool considers two primary aspects of quality: care receiver-to-provider ratios, which are considered in assessing care coverage gaps in terms of the number of additional care providers; and care provider educational/skills qualifications and employment conditions, including target salaries. These are included as features of the different services-expansion scenarios (progressive and high road).
- If the prevailing ratio of care receivers to care service providers (e.g. number of children per teacher) fall short of desired policy targets, then the care coverage quality gap is the additional number of service providers necessary to achieve the target ratio.
- Other components of quality include infrastructure, materials (such as learning materials in education) and administrative support, although these are more difficult to capture in a single measure (this is further discussed in the relevant sections below).

The care services coverage gap equals the difference between potential demand for and existing supply of services. This can be measured in terms of the additional care receivers to benefit from services, for example the number of children to be enrolled in ECCE centres, by age group, or the number of older persons to be covered by LTC services. Or it can be measured in terms of the additional care providers needed to meet the potential demand of care receivers, for example the additional healthcare personnel required.

5.2 Estimating the costs of eliminating coverage gaps – overview

The next step is to estimate the costs involved in expansion and/or upgrading of care services (i.e. the magnitude of required public investments and expenditures) to close the care coverage gaps assessed in the first step.

Note: The costing methodology[20]

Variable costs are recurring costs such as staff wages and salaries, rent, utilities, food and other material inputs, transport and financial services.

Fixed costs are one-time, upfront expenditures for setting up care facilities, such as building infrastructure, furniture, technology and equipment.

In estimating the economic returns on care investments, the emphasis of the tool is on employment creation on a continuous basis, which is facilitated through recurring variable costs (expenditures). Overhead costs, which are derived from national data, may include rental costs.

TABLE 2
Steps in costing the care coverage gaps

Step	Data needs	Comments
1. Determine prevailing unit cost	• Sectoral expenditures public (and private) • Wage costs vs. non-wage costs • Existing no. of care receivers, disaggregated by public and private services	Look at: • Public budgets • Umbrella organizations of service providers • Input-output (IO) data • Field surveys
2. Adjust unit cost for service quality criteria	• Existing and target service receiver-to-provider ratios; any other existing and target service quality measures (see Table 4)	To the extent that data exist, disaggregate by type of service provider (such as public vs. private vs. non-profit providers). Quality indicators may also vary by region. Look for any existing recent studies on assessments of service quality.
3. Adjust unit cost for employment quality criteria	• Existing and target skills/qualifications, employment conditions and wage levels of care workers; wage levels of other groups of workers for comparison and adjustment	Wage adjustments can be made by comparing existing earnings in care occupations with other measures of earnings such as the median wage in all or similar occupations, median wage of tertiary graduates, GDP per capita, etc. and adjusting target wages accordingly.
4. Find the total cost	• Number of additional service receivers to be covered • Steps 2 and 3 above	

Key steps in costing care coverage gaps are summarized in Table 2 and explained in greater detail below.

Step 1: Determine prevailing unit cost

- As a baseline, the average prevailing cost of care services provisioning per care receiver per year can be obtained based on annual sectoral expenditures and current number of service receivers, by simply dividing existing annual (public) expenditures by total number of care receivers covered by services at prevailing levels. *See Annex 6, Box A6.2, equation 3.*
- Sectoral expenditures can be obtained from relevant public agencies, in particular the national or relevant ministry budget allocations, or an umbrella organization of service providers (e.g. association of childcare centres), or other sources such as input-output (IO) data.[21]
- Alternatively, the cost can be derived based on the number of care workers (e.g. teachers and assistant teachers) that need to be employed, their wages, and non-wage (overhead costs) per care receiver or per service provider. If no data exist, they can be obtained from a field survey of existing service providers.[22]

Steps 2 and 3: Adjust unit cost for service and employment quality criteria

- The next step is to consider whether current (observed) costs per care receiver reflect the desired quality in service provisioning from the care receiver perspective and also the desired employment quality (namely decent work) from the care provider perspective.
- If it is deemed that current service quality and/or work/pay conditions are poor, then the observed (prevailing) unit cost should be adjusted to reflect additional expenditures for improving the quality of services and employment, e.g. to achieve improved care service receiver-to-provider ratios and/or better wages for care workers.

Note: In assessing care coverage gaps and costing them in line with service quality and decent employment criteria, a series of specific assumptions and judgement calls need to be made. These can be formulated to reflect objectives and targets as identified by care receiver communities and multiple stakeholders at the national, regional and local levels.[23]

Step 4: Find the total cost

- The adjusted per unit cost per service receiver is then multiplied by the additional number of people to be covered by care services, to estimate the total cost of necessary expenditures. *See Annex 6, Box A6.2, equation 4.*

5.3 Contextualizing costs within the fiscal and macroeconomic policy framework

Once the scope of necessary additional spending has been determined, its magnitude should be analysed with respect to existing patterns of fiscal expenditures and the macroeconomic policy framework prevalent in the country context. This analysis can be situated along a time dimension, exploring how public expenditures on the relevant care sector have changed relative to GDP or various other expenditure categories, as shown below.

Note: This step is important because the case for public investment and expenditures in care services expansion, particularly as a countercyclical macroeconomic tool, is embedded in macroeconomic policy debates (see Box 5 in Part A).

Total costs should be expressed with respect to (and as a share of) at least one of the following:

- GDP (current or projected)
- Total public expenditures
- Relevant public budget items, such as total education or health expenditures
- Alternative public budget items, such as expenditures on physical infrastructure
- The size of a fiscal stimulus package and its line allocations

Tip #1: The projected expenditures necessary for closing the care coverage gap can be rolled out in phases; the spending can increase gradually over several years to finally reach the desired annual amount. This would mean planning the service expansion in phases aligned with national priorities, e.g. initially covering disadvantaged groups or regions.

Tip #2: An evaluation of the additional spending necessary to eliminate the care coverage gap can also be contextualized with respect to the fiscal space in central and local budgets. If there is a fiscal expansion in the country – in particular, if there is a fiscal stimulus package – the (planned or realized) allocation of expenditures can be evaluated in terms of the share (if any) of social care expenditures. This serves as an indicator of the gender and care responsiveness of fiscal spending. In a similar vein, if there is a fiscal contraction, cuts in public spending can be evaluated with an assessment of reductions in care service expenditures (if any) vs. reductions in other lines of spending.

6. COVERAGE GAPS AND COSTS IN EDUCATION

6.1 Assessing coverage gaps in early childhood care and education

The bulk of care provisioning for children under the mandatory school age is undertaken through the unpaid work of mothers, fathers, family and friends. This section considers the expansion of early childhood care and education (ECCE) services through formal centre-based and paid care services in childcare centres and preschools.

The ECCE coverage gap reflects the difference between the number of children who would need to be enrolled in a childcare centre or preschool in order for the country in question to achieve the policy target (such as the enrolment rates of the best-performing country in the region) minus the number of children who are currently enrolled in a childcare centre or preschool for each age group. This yields the number of additional ECCE places that would need to be created to reach the target enrolment rate.

Note: ECCE target enrolment rates are typically set by age group. The mandatory school age in most countries is 5 or 6 years old, so targets need to be set for two or three groups, as follows:

- Age 0-2 (day nurseries/crèches)
- Age 3-4 or 3-5 (preschools/kindergartens)
- Age 5 or 6 (school preparatory classes prior to the mandatory school starting age)

In most countries the last category of 'school preparatory classes' is considered part of the primary school system and most national legislations mandate universal coverage, as in primary schooling, although attendance may be on a part-time basis.

There are different reference points for setting the policy target enrolment rate for the 0-2 and 3-5 age groups, which can be seen in Table 3. As an international target, SDG indicator 4.2.2 (under SDG 4, education for all) foresees a minimum one year of preschool education for all children under the mandatory school age. The ILO (2018) study, which depicts a high-road care services scenario, suggests a more progressive interpretation by setting the targets at 50 per cent for the 0-2 age group and 100 per cent for the age 3 to mandatory school age group.

For children aged 0-2, the target of 50 per cent is derived on the basis of the best-performing countries as identified not by the highest enrolment rates but rather the lowest use of informal childcare services (defined as care provided by grandparents or other relatives/friends/neighbours without payment).[24] This acknowledges that quality care for young children entails a combination of complementary home-based (predominantly parental/family) and centre-based care. There will be more reliance on the former for children 0-12 months old, with increasing enrolment of children aged 12-36 months.[25]

In the case of the 45-country study by the ILO (2018), the OECD was the point of reference.[26] OECD countries have an average rate of 24 per cent utilization of informal childcare. The lowest use of informal childcare and *the corresponding enrolment rates of children aged 0-2* are in the following countries:

- Norway (0 per cent; *55 per cent*)
- Finland (0.3 per cent; *28 per cent*)
- Sweden (2.2 per cent; *47 per cent*)
- Denmark (5.2 per cent; *65 per cent*)

The target 50 per cent enrolment rate for the 0-2 age group represents a weighted average of these four best-performing countries. The policy target of 100 per cent enrolment rate for the 3-5 age group was derived from the fact that the majority of high- and upper-middle-income countries have achieved universal coverage for this group, and a significant number of countries have legislation that mandates universal access to preschool education for this age group (Ilkkaracan and Kim 2019, p.12).

The coverage gap in ECCE is calculated as the difference between the total number of children to be enrolled in ECCE centres given the target enrolment rate, and the number of currently enrolled children. *See Annex 6, Box A6.3, equation 5a.* Calculation of the education coverage gap in ECCE would yield the additional number of spaces to be provided at childcare centres and preschools in order to reach the policy target enrolment rate.

Key considerations:

- The quality targets in education are as important as enrolment rates; this is particularly the case in ECCE, as parents are more likely to abstain from using services unless they have full trust in the service quality.
- Common measures of service quality are child-to-teacher ratio and class/group size, again varying by age group. Teacher qualifications and competitive salaries also serve as quality indicators both for services and employment. Some reference targets for service quality measures are presented in Table 4.
- Target child-to-teacher ratios vary widely by age group. These range from three children age 0-12 months per teacher and five children age 1-2 years per teacher, as foreseen in some national benchmarks, to ten children age 0-2 per teacher as foreseen by UNESCO (2015).
- Learning materials and administrative support are other components of quality, although they are more difficult to capture in a single measure (this is discussed under costing below).
- The discussion of coverage gaps and quality indicators in ECCE (and education overall) should be accompanied by a discussion on relevant legislation on ECCE, addressing questions such as: who has the right to public ECCE; who has the responsibility for provisioning, e.g. national or local governments; who oversees/licenses private ECCE centres; what are the requirements on child-to-teacher ratios, teacher qualifications, class/group size, support staff such as teaching assistants, administrative staff, teaching materials, and school buildings and grounds, etc.

6.2 Assessing coverage gaps in primary and secondary education

For primary and secondary education, setting target enrolment rates is straightforward, as almost all countries have legislation on mandatory primary education and the majority of countries have legislated mandatory secondary education. SDG 4.1 defines clear targets here, unlike for ECCE, stating that all children should have access to free and quality primary and secondary education.

Given the target of universal primary and secondary schooling, the coverage gap at the primary and secondary levels is simply the difference between the child population in the relevant age group and the number of children/students already enrolled in each level of education. The coverage gaps in primary and secondary education show the additional number of children to be enrolled in primary or secondary schooling in order to meet the universal enrolment target.

Another important factor to consider in assessing the coverage gap at primary and secondary levels is the need for additional support for marginalized and disadvantaged children (such as refugee children), e.g. free uniforms, tuition support, first-language instruction, construction of remote or mobile schools for hard-to-reach children, and support for children with disabilities. Moreover, the disruption to education caused by shocks such as the Covid-19 pandemic also calls for consideration of the types of coverage gaps caused under extraordinary circumstances and the necessary allocation of funds to build the educational system's resilience against such shocks.

TABLE 3
Setting policy target enrolment rates in education (%)*

Age group	Early childhood care and education (ECCE)		Primary	Secondary
	0-2	3-5		
Global average	44			
OECD average	35	84	100	100
EU average	31	85	100	100
EU Barcelona targets**	33	90		
SDG 4 **SDG 4.2.2 for ECCE** **SDG 4.1 for primary and secondary education**			100	100
ILO (2018)	50	100	100	100

* Enrolment rates are measured as the number of children enrolled as a share of the total population by age group.

** The Barcelona targets on early childhood care and preschool education, which were established by the European Commission in 2002, are the first (and other than SDG 4.2, the only) cross-country criteria specifying quantitative policy targets.

TABLE 4

Setting policy targets on service and employment quality in education (%)

	Age 0-2	Age 3-5	Primary	Secondary
Students per teacher				
UNESCO (2015) **ILO (2018)**	10	15	31	28
Some high-quality national benchmarks	Max. 3 for age 0-12 months Max. 5 for 1-2 year olds			
Group size				
ILO (2013)	–	20	–	–
Teacher salaries				
ILO (2018)	4.5 times GDP per capita for low- and lower-middle-income countries Average salary of tertiary graduates for high- and upper-middle-income countries			
UNESCO (2015), based on Wils (2015) for low-income countries	4.5 times GDP per capita			5.9 times GDP per capita

The coverage gap in education is calculated as the number of children in the relevant age group (primary school age and secondary school age) multiplied by the target enrolment rate for that age group, minus the number of children currently enrolled. In simple terms, this measures how many additional children should be enrolled to reach the desired enrolment targets for primary and secondary education. *See Annex 6, Box A6.3, equations 5b and 5c.*

6.3 Estimating the costs of closing coverage gaps in education

Costing the education gap depends on two main elements:

- The number of additional spaces to be created for new child/student enrolment
- The cost per child/student, adjusted to meet quality criteria

Both are disaggregated by age group (for ECCE) or level of education (primary/secondary).

A baseline for cost per child/student can be identified by dividing the current level of government expenditures by the total number of children/students enrolled in the public education system, separately for each level of education (0-2 and 3-5 ECCE, primary and secondary education). Here it is important to distinguish between full-time and part-time students in order to derive the per child/student expenditure on the basis of full-time enrolment per year. The expenditures need to be treated in two parts:

- Teaching staff wages and salaries
- Remaining overhead expenditures, including administrative and support staff wages and salaries, and all non-wage expenditures including teaching materials, rent, maintenance, non-staff administrative and input costs.

Identification of the overhead component as a separate cost item enables derivation of the per child/student overhead costs separate from teaching staff wages and salaries. Hence the latter can be adjusted to reflect the desired child/student-to-teacher ratio and the wage/salary levels.

The teaching staff wage and salary expenditures required at each level of education are derived based on the education coverage gaps for each group (as identified in Sections 6.1 and 6.2) and target annual salary per teacher. *See Annex 6, Box A6.4, equation 6.*

The total overhead expenditures are derived from the per child overhead expenditures (taking existing overhead expenditures as the reference) and the coverage gap for each age group. *See Annex 6, Box A6.4, equation 7.*

Note that in many cases the ministry of education budgets report wage/salary expenditures separately. This figure can be deducted from overall expenditures to derive overhead expenditures, unless the overhead expenditures are also reported separately.

These two cost items (teacher salaries plus overhead expenditures) make up the total cost of eliminating the coverage gap in education, i.e. the required expenditures to ensure that the target enrolment rates are achieved for each age group. *See Annex 6, Box A6.4, equation 8.*

Data requirements for assessing the care coverage gap and costing in education (including ECCE) are shown in Table 5.

TABLE 5

Data requirements for assessing the care coverage gaps and costing in education

Data	Disaggregation by		Source
	Level of education	Other	
Child population		Age group, if relevant; also by gender, region, etc.	• National statistics agency, population statistics
Enrolment rates	ECCE, primary and secondary	Age group; public vs. private; part-time vs. full-time (or relevant data on no. of weeks/hours of enrolment per year); if relevant, by gender, region, etc.	• Ministry of education • Ministry for social services/family (for childcare centres) • Teachers' unions • Field surveys and research reports
Child/student-to-teacher ratios and class/group size	ECCE, primary and secondary		
Teacher wages and salaries	ECCE, primary and secondary		
Average/median wages and salaries in the overall labour market		Education/occupation/sector	• Household labour force surveys
GDP per capita			• National account statistics
Government expenditures on education	ECCE, primary and secondary	Teaching and other staff salaries vs. overhead expenditures	• Ministry of education budget • Ministry for social services/family budget

The most recent available data should be used in assessing and costing care coverage gaps; when using data from different sources, they should be from the same year. It is also recommended to present an overview of trends in enrolment rates over time.

To the extent that cost and employment data are not identifiable from existing sources (which may be the case for ECCE in particular), another possibility is to conduct a field survey of childcare centres and preschools.[27]

Note: It may be necessary to make quality adjustments in overhead expenditures if the context analysis of the education system in the preparatory phase indicates quality problems with non-teaching components of service provisioning. Such an adjustment would reflect improved ratios of children/students to administrative staff, administrative staff wages and salaries, and non-staff overhead expenditures.

In the case of additional support needs for marginalized groups of children the gap assessment and costing should be customized according to the particular needs.[28]

7. COVERAGE GAPS AND COSTS IN HEALTHCARE SERVICES

A competent health workforce of adequate size, optimally organized and distributed, especially in rural and underserved areas, is crucial to the attainment of public health objectives and for strengthening the performance and resilience of healthcare systems.[29]

Healthcare services entail curative, rehabilitative, preventive and long-term care (LTC) services for treatment of non-permanent or permanent health problems, and for maintenance and improvement of health. LTC stands apart from other types of healthcare services because it also involves non-medical care in providing support for daily living, primarily geared toward older persons. As such, LTC is discussed separately, in Section 8.

7.1 Assessing coverage gaps in healthcare

Assessment of healthcare coverage gaps can be conducted on the basis of required health personnel per population to meet the criteria set out by the SDGs, in particular SDG 3 on good health and well-being for all. In this respect it differs from assessment of the education coverage gap, which is based on the number of additional children/students to be covered. The data needs for assessment of the healthcare coverage gaps and costing are summarized in Table 6.

A 2016 assessment by the World Health Organization (WHO) entitled "Health Workforce Requirements for Universal Health Coverage and the Sustainable Development Goals" provides healthcare coverage targets. These are based on 12 key population health indicators,[30] identified by WHO and the World Bank, which are used to establish a composite index. The index is weighted according to the global burden of disease, and the minimum thresholds for health personnel are derived through regression analysis (WHO 2016, p.6).

Accordingly, the SDG index threshold is set at 4.45 health workers (doctors, midwives and nurses) per 1,000 population. This is higher than previous thresholds, for example 2.3 in WHO (2006), 3.4 in WHO (2010) and 4.1 in ILO (2014). The increase in the threshold is justified on the basis that the reference range of services has been expanded. Higher thresholds also exist; for example, the WHO Ending Preventable Maternal Mortality initiative sets the threshold at 5.9 health workers per 1,000 population (WHO 2021).

The above thresholds refer to three primary categories of health workers: doctors, midwives and nurses. There are also what WHO (2016) calls "the other cadres" of health workers.[31]

WHO (2016, p.11) reports the required ratio of the number of health workers in other cadres to the number of total health workers in in primary categories (doctors, midwives and nurses), disaggregated by income level. The ratio is 0.373 for high-income countries, 0.406 for upper-middle-income countries,

0.549 for lower-middle-income countries, and 0.595 for low-income countries. The report notes that "a renewed focus on a more diverse skills mix and a greater role for community health workers in some settings may conversely result in an increase of these relative to the number of nurses/midwives and doctors in future" (WHO 2016, p.6). Hence, the ratio should be identified based on the existing numbers of health workers and the specific needs in each country.

The health coverage gap can then be expressed as the additional number of doctors, midwives and nurses (DMN) required to meet the minimum threshold plus the additional number of health workers in the other cadres (HWOC) required to meet the country-specific fixed ratio (CFR). Where data on the CFR are not readily available, the fixed ratios derived for ILO (2018) based on income level of the country can be used (see above).

- The total healthcare services coverage gap equals the shortage of doctors, midwives and nurses (DMN) plus the shortage of health workers in other cadres (HWOC).
- To calculate the shortage of DMN, multiply the total population (expressed in thousands) by 4.45 (the recommended minimum number of DMN per 1,000 people).[32] Subtract the number of DMN currently employed. The result is the number of additional doctors, midwives and nurses needed.
- To estimate the shortage of HWOC, multiply the shortage of DMN by the country's fixed ratio (CFR). The CFR is calculated as the number of currently employed HWOC divided by the number of currently employed DMN. This ratio reflects how many HWOC typically exist for each DMN in the country.
- The sum of the DMN and HWOC shortages provides the total healthcare workers that need to be employed to meet the additional demand in healthcare; in other words, to eliminate the healthcare services coverage gap.

See Annex 6 Box A6.5, equations 9–11.

7.2 Estimating the costs of closing coverage gaps in healthcare

Costing of the healthcare coverage gap requires data on public expenditures on health, the share of expenditures allocated to wage and salary payments for health workers, and the public wage scale for health workers by different categories (see Table 6). While this data can be obtained from national sources (primarily the ministry of health), the WHO Global Health Expenditure Database[33] also provides regional as well as some country-level and internationally comparable data to be used in the costing of healthcare services.

The total cost of the healthcare coverage gap would be the sum of the annual wages and salaries to be paid for recruitment of the additional doctors, midwives and nurses (DMN) required to meet the minimum threshold, plus the annual wages and salaries to be paid for recruitment of additional health workers in the other cadres (HWOC) as determined by the country-specific fixed ratio. *See Annex 6, Box A6.5, equation 12.*

Annual target salary per health worker by different categories is based on comparing the starting wage/salary levels of health workers in the country to average pay levels for tertiary or upper-secondary educated workers, or to GDP per capita.[34]

Finally, the cost of overhead expenditures is required. This can be calculated by taking the total public expenditures on health, and subtracting the public expenditures allocated to wage and salary payments

to health workers. Dividing the current overhead expenditures by the current number of health workers (DMN + HWOC) provides overhead expenditures per healthcare employee. This unit cost multiplied by the additional number of healthcare workers to be employed yields total overhead expenditures. *See Annex 6, Box A6.5, equation 13.*

Adding this figure to the annual wages and salaries to be paid for recruitment of additional DMN and HWOC provides the total cost of eliminating healthcare coverage gaps. *See Annex 6, Box A6.5, equation 14.*

TABLE 6

Data requirements for assessing the care coverage gaps and costing in healthcare

Data	Disaggregation by	Source
Population		• National statistics agency, population statistics
Health sector employment data	• Primary health worker cadres (doctors, midwives, nurses) • Other cadres (health professionals other than doctors, midwives, nurses)	• Ministry of health • WHO Global Health Expenditure Database • Unions of health workers • Field surveys and research reports
Health professionals' wages and salaries		
Average/median wages/ salaries of tertiary educated workers		• Household labour force surveys
GDP per capita		• National account statistics
Expenditures on health	• Staff wage/salary expenditures vs. non-wage/salary expenditures	• Ministry of health budget • WHO Global Health Expenditure Database

8. COVERAGE GAPS AND COSTS IN LONG-TERM CARE

Long-term or rehabilitative care (LTC) for older persons or persons with disabilities or chronic illness includes a large variety of services, ranging from assistance with basic daily living activities, such as eating, bathing, dressing, mobility in or outside of the house, to support with basic healthcare including medication, health monitoring, doctor's visits, pain management and wound dressing. A wider definition of LTC also includes supporting these direct care activities with secondary indirect care services such as shopping, cooking, cleaning and other necessary housework (Ilkkaracan and Kim 2019, p.33).

Provision of LTC services takes place in various settings, such as professional care services in an institutional setting (residential nursing homes or day centres), or in a home-based setting with paid care services provided by domestic workers and unpaid care services by family and friends (Lipszyc et al. 2012; Gardiner and Hussein 2015). In the discussion below, formal professional care provisioning, whether in an institutional or home-based setting, constitutes the reference point for assessing and costing the coverage gaps in LTC services. Note that many countries also provide cash benefits to households with individuals in need of LTC, which can be used to pay for care provided by domestic workers or function as a form of compensation for services provided by family and friends. Assessment of LTC coverage gaps does not include cash transfers.

LTC service needs (in particular in terms of human resources and labour intensity required) and associated costs vary widely according to the level of dependency. As most countries do not have data on level of dependency, the methodology for assessing LTC coverage gaps and costs is based on the population aged 65 and above, and on average costs. If and when more detailed data are available, they can be used in the assessment.

8.1 Assessing coverage gaps in long-term care

In defining LTC coverage, there are two possible reference populations: the population aged 65 and above (hereafter the 65+ population) or the 'dependent' population, where 'dependency' is defined as "limitation in activities because of health problems" (Lipszyc et al. 2012, p.24). The share of the dependent population increases by age group. In most EU countries, for example, the share of dependent people among those aged under 30 years is in the 1 to 3 per cent range; for the population aged 65-69 years old, it ranges from 6.5 to 24.1 per cent, and for the 85+ population it ranges from 20.3 to 63 per cent (Lipszyc et al. 2012, p.71). Since regularly updated data on the size of the 65+ population are readily available, unlike data on dependency,[35] the former is more commonly used as the reference population in determining LTC coverage.

Note: WHO provides data on disability prevalence rates by age group. However, not all people with disabilities require LTC support. Hence data on disability prevalence would need to be used together with data on LTC needs of people with disabilities (varying by age group) to determine LTC needs. Data for the latter are not readily available for most countries. The rest of the discussion in this tool therefore focuses on the 65+ population, as more data are available for this age group as well as international benchmarks on coverage rates and care receiver-to-provider ratios. To the extent that context-specific data exist, the methodology below can also be applied to other age groups to determine LTC needs for the rest of the population.

Similar to the case of ECCE services within education, there are no internationally agreed policy targets on LTC coverage rates. To identify a target LTC coverage rate, Ilkkaracan and Kim (2019) and ILO (2018) take high-performing countries as a point of reference. High performance is defined based on a comprehensive study on LTC by Scheil-Adlung (2015), where countries are categorized in terms of legislation with respect to full legal access to LTC support in the form of services or cash benefits. This study identified nine OECD countries with legislation on entitlement to universal coverage; the population-weighted average LTC coverage rate of these nine countries was 12.4 per cent. This can serve as a lower bound target for the LTC coverage rate.[36]

The data needs for assessment and costing of LTC coverage gaps are summarized in Table 7. The LTC coverage gap can be measured in terms of the additional number of care receivers needed to meet the target coverage rate (e.g. 12.4 per cent). This is calculated as the difference between number of people in the 65+ population to be covered to meet the target policy rate, and the current number of people in the 65+ population who already are covered by services, i.e. those benefitting from institutional centre-based services (residential or daycare) or home-based professional services.[37]

The LTC coverage gap can also be measured in terms of the number of additional LTC workers required to provide services to the additional LTC receivers to be covered. For this, a target LTC receiver-to-worker ratio is required. Scheil-Adlung (2015) identified a reference target based on the population-weighted median values of formal LTC workers (full-time equivalent, FTE) per 100 people aged 65+ in 18 selected high-performing OECD countries in the Americas, Asia and the Pacific, and Europe, which provide LTC through a variety of systems. Based on their average, the threshold is set at 4.2 FTE formal LTC workers per 100 people aged 65+. The number of FTE care workers needed is identified with respect to employment hours. The number of hours of contact (service time) required per LTC receiver determines the number of employment hours required of LTC workers.

Since the availability of LTC services in the 18 OECD countries is not rated as satisfactory, Scheil-Adlung notes that 4.2 workers per 100 people aged 65+ establishes a lower-bound threshold (Scheil-Adlung 2015, p.11). The number of LTC workers per 100 people aged 65+ in these countries ranges from 0 workers (for many countries) to 17 workers (in Norway).

Note that the combination of the two policy targets discussed above, namely 12.4 per cent of the 65+ population as potential care receivers of LTC, and 4.2 LTC workers per 100 people in the 65+ population, yields a LTC receiver-to-worker ratio of approximately 3:1. In short, if the number of people in the dependent population is known, it is possible to assess the required number of LTC workers by dividing the dependent population by 3 and subtracting the current number of LTC workers. *See Annex 6, Box A6.6, equations 15 and 16.*

8.2 Estimating the costs of closing coverage gaps in long-term care

The cost of closing LTC coverage gaps can also be estimated in two ways:

- Cost of the additional number of people in the 65+ population to be covered by LTC services in order to close the coverage gap (additional LTC receivers), plus the required (adjusted) expenditure per care receiver; or
- Cost of the additional number of LTC workers required to close the coverage gap and to achieve the target annual salary per LTC worker, plus any overhead expenditures.

To calculate the cost using the number of additional care receivers: determine the adjusted cost per LTC care receiver and multiply this by the number of additional care receivers required. The adjusted cost per LTC care receiver is calculated as total public expenditures on LTC (including any wage adjustments) divided by the current number of LTC care receivers. This gives the average public cost per person receiving long-term care. *See Annex 6, Box A6.6, equations 17 and 18.*

To calculate the cost in terms of workforce needs: multiply the number of additional FTE LTC workers required by the target annual salary per LTC worker. Add any additional overhead costs if applicable (such as administration, facilities or equipment). *See Annex 6, Box A.6, equation 19.*

The wage adjustment aims to reflect improved target salaries for LTC workers, who on average receive very low wages; this is also true for LTC workers in high-income countries. For example, LTC workers earn 50 per cent of the average wage in the United States, 14 per cent above the minimum wage in the United Kingdom, and between 50 and 75 per cent of the average national wages in OECD countries.[38] Skilled LTC workers are better paid and receive roughly average wages.

The target annual salary for FTE LTC workers can be set in relation to the average national wage. Country-specific wage targets can be set by comparing LTC workers' wages with statutory wages or with the average wages of workers with comparable job descriptions or skill sets, and adjusting them accordingly.[39]

Wage payments constitute a large share of LTC costs and in most cases overhead expenditures are low, particularly in the case of home-based formal services. Nevertheless, in the case of expansion of services based on institutional settings (such as daycare centres for older persons or persons with disabilities), overhead expenditures need to be taken into consideration. If data are available, overhead expenditures per LTC receiver or worker can be derived on the basis of public expenditures and the share of wage payments therein. If not, institutional accounts or field surveys can serve as source of data (see Table 7).

TABLE 7

Data requirements for assessing LTC coverage gaps and costing

<table>
<tr><th>Data</th><th>Disaggregation</th><th>Source</th></tr>
<tr><td>Data requirements for assessing LTC coverage gaps and costing</td><td></td><td>• National statistics agency, population statistics</td></tr>
<tr><td>Health sector employment data</td><td>Care receivers by access to services vs. cash transfers</td><td rowspan="3">• Ministry of health
• Ministry of social policies/family
• International health statistics databases such as WHO, OECD
• Unions of LTC workers
• Field surveys and research reports</td></tr>
<tr><td>Health professionals’ wages and salaries</td><td>By sector (public/private) and workplace (institution/home)</td></tr>
<tr><td>Average/median wages/salaries of tertiary educated workers</td><td>Expenditures on services vs. cash transfers; expenditures on wages/salaries vs. non-wage/salary expenditures</td></tr>
<tr><td>GDP per capita</td><td>By education level
By profession (domestic workers, care workers, health workers/nurses)</td><td>• Household labour force surveys</td></tr>
<tr><td>Expenditures on health</td><td></td><td>• Ministry of labour</td></tr>
</table>

9. ASSESSING THE RETURNS ON INVESTMENTS IN CARE SERVICES

While there are multiple economic and social returns on investing in care services expansion, this policy tool focuses on labour demand-side outcomes, i.e. employment creation and related outcomes (see Figure 1 in Part A). Table 8 shows the data and expertise requirements for each objective.

TABLE 8
Data and skills requirements for estimating economic returns on investment

Economic returns to be estimated	Data requirements	Methodology/ expertise
Direct employment creation in the target care services sectors	Basic data requirements for care coverage gap assessment	Basic data collection, compilation and analysis
Indirect and induced employment creation in other sectors	Input-output data	Input-output analysis
Gender distribution of direct and indirect employment creation	Household labour force survey data, disaggregated by gender and sector	Basic data collection, compilation and analysis
Tax revenue generation	Income and consumption tax; social security tax	Public finance
GDP growth (and other possible macro indicators)	Data requirements depend on the empirical method used (e.g. input-output data for IO analysis, macro time series data for macro econometric simulation)	Macroeconomic modelling
Earnings and their distribution; poverty impact	Household income and expenditures survey micro data; or survey on income and living conditions micro data	Microsimulation modelling
Time and its distribution; time poverty impact	Time-use survey data	Microsimulation modelling

Impact of care services expenditures on labour demand, earnings and taxes

Increasing spending for expansion of care services affects demand for labour, both in the care sectors (through direct employment creation) and in other related sectors (through indirect and induced employment creation). The potential of care services sectors in employment creation is particularly strong given their high employment multipliers. This means that every dollar spent on the care services sectors (increasing the sectoral revenues) creates more jobs than a dollar spent on another sector, with a potentially stronger impact on unemployment reduction (see Section 10.1 for a sectoral comparison). To the extent that the policy scenarios encompass decent wages and work conditions, this employment creation rests on decent jobs.

New employment generates new labour earnings and stimulates aggregate demand and demand-led growth. Increased employment and earnings imply a return on government spending through tax revenues, allowing for self-financing potential.

Distributional outcomes through labour demand-side mechanisms

There are important distributional outcomes of this demand-side mechanism by gender, household income and other characteristics (urban/rural location, region, household size), individual characteristics (age, education, marital status, etc.), depending on who the new job recipients are. Labour demand emerging from expansion of care services sectors is likely to benefit women in particular, given their overrepresentation in these sectors, hence narrowing gender employment and income gaps.

Note, however, that the impact of expanding care services sectors on improving women's employment through jobs generation for women is a lower bound estimate, since there are also potential positive effects on women's employment through alleviation of unpaid care work constraints. The distributional outcomes operate both through the redistribution of employment and income as well as time allocation. Studies have shown that simultaneous access to jobs and services impact both paid and unpaid work time, resulting in cumulative positive outcomes for both income- and time poverty.[40] In other words, expansion of care services supports an increase in women's labour supply by reducing the time women spend on unpaid care work.

Why focus on the labour demand-side outcomes of increasing expenditures on care services?

This policy tool emphasizes that care services constitute an important sectoral target for public spending, which promises immediate returns in the form of new jobs, enhanced labour earnings, reduced poverty, and inclusive, gender-equitable and sustainable growth. A focus on the demand-side outcomes can be justified on the basis of the importance of these policy objectives. This focus also allows for critical evaluation of public budget allocation decisions, which are taken with a one-year timeframe, as election cycles lead policymakers to put more emphasis on short-run returns.

The contribution of care services expansion to sustainability is twofold: jobs generation builds social sustainability, given its equality-enhancing outcomes. It also contributes to ecological sustainability, as care jobs are local service jobs with low emissions and waste (see Section 10.2 on analysis of the carbon impact of investing in care services).

The rest of Section 9 discusses the assessment of various short-run demand-side economic returns, and outlines some of the different methodological approaches and tools that can be used (see Table 9 for a summary of these).

TABLE 9

Assessing economic returns on investing in care – summary of methodologies and data

Economic returns: assessment measures	Methodology	Data
• **Jobs generation** • **Gender distribution of employment**	• Direct employment creation calculated based on care coverage gaps (CCG) and care coverage quality gaps (CCQG) and target service care receiver-to-provider ratios (t.s.r.) • Input-output (IO) analysis for estimation of indirect and induced employment creation • Allocation of jobs by industry obtained from the above using the gender ratios of current industrial employment	• CCG, CCQG, t.s.r., care worker to non-care worker ratio in care sectors • IO data • Household labour force survey data (employment disaggregated by sector and gender)
Tax revenue returns and short-run fiscal sustainability	• Derivation of change in tax revenues on the basis of average wages and number of new jobs	• Number of new (direct and indirect) jobs • Average annual salaries of newly employed workers • Income and consumption tax rates
Distribution of new employment and income by worker characteristics - such as gender, education, age, household income, poverty status, region, and labour market status (unemployed, homemaker, student)	• Microsimulation • Regression analysis	• Household income (and labour) survey micro data
Poverty reduction	• Calculation of new household income levels based on the microsimulation results and an assessment of the change in poverty status of household pre- and post- new employment	• Household income (and labour) survey micro data • Poverty thresholds used by official statistics
Long-run growth and productivity	• Applied macroeconomic modelling	• Calibrated macroeconomic model for the country/region (social accounting matrix – SAM)

9.1 Employment creation

Public investment will create jobs directly in the activities within the care services sectors where the investment takes place (e.g. ECCE or LTC services). This is called the direct employment creation effect. It will also create jobs in other sectors through the transactions between the care sectors and these other sectors. As one sector of the economy experiences an increase in demand for its own output, it ends up purchasing more inputs (goods and services) from several other industries. In other words, there are multiplier effects on other sectors in the industries that supply necessary intermediate inputs (raw materials and services) to the care sector. This is called indirect employment creation through backward linkages across sectors.

There is also an employment creation effect through increased household spending due to higher labour earnings of the newly employed workers. This change in household spending induces additional employment in various sectors through new consumption and is therefore called the induced employment creation effect.

Assessment of total employment creation thus entails an estimation of the direct, indirect and induced employment components, as discussed below. *See Annex 6, Box A6.7, equation 20.*

9.1.1 Direct employment creation

Direct employment created in the care sectors comprises of:

- Care workers (such as teachers, teaching assistants, doctors, nurses, long-term care workers)
- Non-care workers (administrative and service support staff such as managers, cleaners, security) employed in the care sectors

Estimation of the direct employment creation of care workers is explained in the relevant sections above.

What has not been included in estimates of direct employment in care sectors so far is the number of administrative and support staff needed (the costings included the wage costs of administrative and support staff as part of overhead costs, but did not calculate the number of staff to be employed).

To estimate the number of additional support staff required, use the existing ratio of non-care workers per care worker in the relevant sector (such as education, healthcare or long-term care). Multiply the number of newly created care worker jobs by this ratio. New non-care worker jobs equal new care worker jobs multiplied by the non-care to care worker ratio. This ratio can be adjusted upward if needed, but then the costing would need to account for the improved ratio of non-care workers per care worker. Total direct employment in care services equals new care worker jobs plus new non-care worker jobs. *See Annex 6, Box A6.7, equations 21–24.*

9.1.2 Indirect and induced employment creation

Indirect employment refers to new jobs created in other sectors, e.g. construction, manufacturing, utilities or transportation, as a result of increased demand for goods and services needed by the expanded care sector. These jobs are created through backward linkages in the economy. Induced employment refers to new jobs created because newly employed workers spend their earnings on goods and services produced in other sectors, e.g. in retail, food services or housing. These jobs arise from increased household consumption.

Indirect employment and induced employment are estimated through an input-output (IO) analysis.

Input-output (IO) analysis: uses, limitations and key considerations

The IO table is a square data matrix, which shows the linkages across sectors (industries) in terms of their input purchases and receipts of income from one another, measured in national currency. It shows the interlinkages across the supply chain of goods and services that eventually meet final demand, disaggregated by household, government and export demand. Hence the impact of expansion of a particular sector (i.e. the impact of increasing output in a particular sector, such as education or healthcare, in response to higher demand) on other sectors can be estimated through IO analysis. This method is commonly used to analyse the economic consequences of any activity, such as the impact of

potential policy decisions or the effects of negative or positive shocks. IO analysis can also be used to estimate the distribution of jobs by gender and industry, tax revenue generation and GDP growth, as discussed in the following sections.

However, IO analysis is subject to a number of limitations and methodological considerations. Some countries do not have any IO data, and in many contexts the data may be outdated.[41] IO analysis is subject to binding assumptions which result in a static (rather than dynamic) analysis. It assumes that each sector of the economy consumes inputs in fixed proportions (i.e. its demand for intermediate inputs is a linear function of sectoral output). A second assumption is constant returns to scale, which precludes the possibility of increasing returns in different industries. Hence analysing the impact of a policy change through IO modelling rests on the assumption that the production structure and interdependencies between different economic sectors and industries remain constant over time, including in the face of shocks and other policy changes. The static nature of IO analysis does not allow for identification of changes that may be triggered by an increase in public expenditures, such as prices, wages, public budget deficits and interest rates, which would all have implications for changes in output. IO models can therefore be complemented by a dynamic model to capture macroeconomy-wide effects.

Estimating indirect employment creation through IO analysis

The main inputs to estimate indirect employment creation through IO analysis are the results of the costing of the care coverage gaps (Sections 6-8). The cost of closing the care services coverage gap, in other words the required public spending, is 'injected' into care services sectors (such as the education or healthcare sector) in order to estimate the corresponding increase in the output of all other related sectors. This method captures multiplier effects through linkages of output growth between industries. Combining the sectoral output data with the corresponding sectoral employment data, it is also possible to estimate the employment multipliers for each sector.

The employment multiplier matrix is a vector of employment intensity by industry, which is the ratio of total number of workers to final output. This can be calculated using IO output data and household labour force survey employment data disaggregated by industry. Employment multipliers are computed by industry to capture the number of jobs created in each industry to produce one additional unit of output. They capture employment generation via inter-industry input supply and demand.

Estimating induced employment creation through IO analysis

Induced employment creation can also be derived through IO analysis, as the IO table also shows the linkages between household consumption spending and the various sectors of the economy. Spending on care services leads to an increase in income, which translates into an increase in consumption, increasing the output and employment in sectors where consumption spending is directed. Note, however, that inclusion of the induced employment effect in estimations of total employment creation is contentious, as the induced effects may create an overestimation bias, depending on the spending multipliers of the different types of households which receive the new jobs.[42] In any case, the results of total employment creation should be reported by providing a breakdown into direct, indirect and (if included) induced employment.

Direct employment creation and IO analysis

Note that it is also possible to estimate direct employment creation in the care sectors using IO analysis. An injection of increased expenditures into a particular care sector yields the corresponding increase in sectoral employment on the basis of its prevailing own employment multiplier, i.e. the number of jobs to be created in the target sector per dollar of additional sectoral spending. The own employment multiplier, however, is determined on the basis of prevailing conditions of production and employment (in the case of the care sector, it is determined by the prevailing ratios of care service receiver-to-provider and the observed wage levels for care workers). As discussed above, IO analysis assumes that these prevailing conditions continue to hold; hence, it cannot control for the quality of employment or services.

Note: This tool recommends making adjustments where necessary to improve the care receiver-to-care worker ratios and the wages of workers employed in the care sectors. Therefore, in estimating the number of direct jobs to be created in the care sector itself, we use the methodology outlined in Sections 6, 7 and 8 rather than IO analysis. The wage allocation (the wage share in total expenditures) is determined a priori according to target wage levels. As a result, we do not take into account the own employment multiplier of the care sector and recommend using IO analysis only to determine indirect and/or induced employment creation.

Aggregation bias in IO analysis

Most IO tables do not have separate sectoral entries for ECCE and LTC; these are included within the education and healthcare services sectors. However, the cost structure, labour intensity and supply linkages of the ECCE and LTC sectors are likely to differ from those of the overall education and healthcare sectors. Therefore, they have different effects on output and employment. For example, ECCE is more labour-intensive than the overall education sector, and the same holds for LTC with respect to healthcare. Injecting an increase in ECCE spending into the overall education sector (or an increase in LTC spending into the overall health sector) is likely to result in underestimation of the employment creation effect, because education and health have lower employment multipliers than the ECCE and LTC sectors. The ECCE and LTC sectors are also likely to differ in terms of their overall cost structure. For example, the healthcare services sector is likely to have higher expenditures than LTC services (given higher costs of medical equipment and technology).

To overcome such aggregation bias, it is possible to use the synthetic sector approach, which involves integrating the ECCE or LTC sector as a separate entity in the IO table. This requires data on the cost structure of the ECCE or the LTC sector.[43]

9.1.3 Distribution of new jobs by gender, industry and occupation

It is important to assess the gender distribution of the new direct and indirect jobs created through expansion of the care services sectors, given its potential to narrow the gender employment gap. This can be done by using existing data on the gender composition of employment (the relative shares of female and male employment in each sector) to determine what share of new (direct and indirect) jobs are likely to employ women. Note that in using the prevailing female share of employment, we are making a binding assumption that the gender composition of employment by sector remains constant under a scenario of care services expansion.

The main source of data for gender composition of employment by sector is the household labour force survey, which is available for all countries. The ILO employment database is another source, compiled on the basis of national labour force surveys. In many cases, it is likely that labour force surveys will not have data on ECCE and LTC as stand-alone sectors. In this case, additional data need to be sought from alternative sources, such as sectoral or occupational/ professional organizations, labour unions and domestic workers' organizations.

Estimation of female share of direct employment is straightforward. The relative share of women and men in ECCE, education, healthcare or LTC as it currently stands is applied to the total number of direct jobs.

Female share of indirect employment can be estimated using the results of the IO analysis, which provides estimates of distribution of the new jobs by industry, and the corresponding share of female employment in each industry. If we assume that the observed composition of employment in the different industries remain constant, it is also possible to identify a breakdown of the new jobs by characteristics other than gender, such as education, age, marital status, and by occupation.

The occupational breakdown is important as an input to the distributional (microsimulation) analysis; the new jobs are allocated to the employable individuals observed in the labour market. This is further discussed in Section 9.3.

9.2 Tax revenues and fiscal sustainability

The fiscal sustainability of an increase in public spending on care services is a primary question of interest. In the short run, part of the expenditures would be self-financed through the increased tax revenues that result from new jobs and earnings generation. This potential for self-financing in the short run is especially important from a policy-making perspective given widespread constraints on fiscal space, particularly in the post-Covid-19 context, where many economies are experiencing limited growth, shrinking tax revenues and increased public debt.

There are two sources of the increase in tax revenues: direct tax revenue from new labour income, including social security contributions; and indirect (sales) tax revenue from increased consumption spending.

Data needs for estimation of tax revenues

The necessary information for calculation of tax returns is:

- Income tax rate (t_i)
- Social security contribution rate (*ssc*; both employee and employer contributions)
- Consumption tax rate (t_c)
- Average propensity to consume (c_p)

The impact of new job creation on tax revenue generation can be estimated through IO modelling, as part of the ripple effects captured in IO data through a systematic multiplier effect (multiple rounds of spending). As explained above, the IO model captures not only taxes from direct effects (direct employment creation) but also indirect and induced effects which generate additional wages and taxes. It also accounts for sectoral differences in taxability.

Competitive general equilibrium (CGE) models provide an alternative method for estimating tax returns on an increase in government spending. Like IO modelling, CGE estimates sectoral linkages and spending cycles, by also allowing for price and wage adjustments.[44]

9.3 Distributional analysis and impact on poverty reduction

The methodology in Section 9.1.3 on employment creation represents a distributional analysis at the macro level in terms of the allocation of new jobs by gender, using the relative female and male shares of employment by sector. A more detailed distributional analysis can be undertaken through microsimulation modelling using micro data from household surveys on income and labour. Most countries' statistical agencies conduct one or more of these household surveys.

Analysis of distribution of new job creation and earnings generation by microsimulation modelling

Microsimulation models can be constructed on the basis of survey data at the individual and household levels, to estimate the probability of individuals with particular attributes (gender, age, education, marital status, household size, and characteristics such as presence of children or other dependent individuals in the household) to be employed in given industry-occupation clusters. Using these probabilities, the newly generated jobs can be allocated to particular individuals observed in the dataset, who are non-employed but deemed eligible for employment (in terms of age and ability). Once the jobs are allocated at the micro level, it becomes possible to estimate the labour earnings of the newly employed individuals and the change in their household income. Hence it becomes possible to identify the associated change in income distribution and poverty rates.

A microsimulation approach developed by the Levy Economics Institute applies statistical matching techniques to analyse distributional outcomes at the micro level of individuals and households (see Table 10).[45] The steps of analysis are as follows:

- Identify a pool of 'employable' workers – people in the prime working-age population, who are not in employment and do not have any health or disability constraints. These are the unemployed (those actively seeking jobs, including underemployed and discouraged workers), homemakers (predominantly female) and students (older than mandatory school age or post-university age). Part of the retired population can be included depending on the country context.
- Allocate the new jobs to the employable individuals who are most likely to occupy them. This is done through a statistical matching procedure. For each individual in the employable pool (potential workers), there is information on their individual or household characteristics such as gender, age, level of education, region of residence. Regression analysis is used to estimate the likelihood of employment of each potential worker. From IO analysis, the distribution of jobs by industry and occupation is already known.
  - For each individual, the industry-occupation cells are ranked based on their highest propensity score. Finally, using an iterative process, individuals in the employable pool with the highest likelihood of employment are assigned the jobs with the highest propensity score.
  - The results of jobs distribution can be presented in terms of various characteristics such as gender, education, age, household income, and labour market status (unemployed, homemaker, student) prior to the policy stimulus.[46]

- Impute labour earnings and paid work hours. Once the jobs are assigned, the labour earnings of the new job recipients can be estimated by regression analysis, using their demographic as well as job characteristics.
  - Using the imputed earnings data, estimate outcomes with respect to income distribution among households and individuals, by household income groups, education/skills levels and gender, including the impact on the gender earnings gap.[47]
- Estimate impact on household income and poverty status. Once the new earnings of individuals are integrated into the household micro dataset, it is possible to identify the impact of new job creation on income poverty.
- Estimate the impact of simultaneous access to jobs and care services on paid and unpaid work time, and on time and income poverty. For this we need a dataset that includes both employment/income and time-use data.
  - Conventionally, household labour/income surveys and time-use surveys are separate. It is possible, however, to match these separate datasets using a statistical procedure. The unpaid work time observed in the time-use survey micro data is integrated into the household labour/income survey micro data, based on the similarity of individual and household characteristics that determine time-use patterns.

For examples of applied studies using matched datasets, see Zacharias et al. (2019) on Ghana and Tanzania, and Ilkkaracan et al. (2021) on Türkiye. They estimate the changes of paid work time (via employment into new jobs) and unpaid work time (via access to care services) in response to an expansion of care services sectors. By using combined time- and income-poverty measures, they are able to assess the overall impact on poverty in a more comprehensive and gender-disaggregated manner.

TABLE 10

Overview of microsimulation for distributional analysis

Step	Procedure
Identify a pool of employable people	Identify non-employed but eligible for employment individuals (working age, without disabilities or illness) including the unemployed and homemakers
Assign jobs	For each employable individual, estimate the likelihood of being employed in each industry-occupation category; rank by likelihood of employment and assign the new jobs to employable individuals with the highest likelihood
Impute labour earnings and paid work hours	Predict wage earnings and work hours using a hot-decking procedure and regression analysis using information on individual and household demographic characteristics, and industry and occupation of employment
Estimate impact on household income and poverty status	Compare pre- and post-employment household income and change in total earnings by household income quintiles; and pre- vs. post-employment poverty rates
Estimate impact on paid and unpaid work time, time and income poverty	Match household time-use data with household income data; estimate the change in paid and unpaid work time of newly employed individuals living in households with care-dependent household members

9.4 Macro modelling to estimate impact on growth and other macroeconomic indicators

Estimation of macroeconomic outcomes other than employment creation contributes to building a stronger case for public investments in particular sectors to discuss with macroeconomic policy-makers. This may be particularly important in country contexts where the feasibility of fiscal policy interventions is constrained by fragile macro balances. Zacharias et al. (2019) note, for example, that in the context of simulating the employment and time impact of childcare services and road improvements in Ghana and Tanzania, the latter policy intervention may require imported machinery and raw materials in addition to domestically produced inputs and labour. Hence a policy intervention to reduce commuting and unpaid work time may place demands on the foreign exchange reserves of the country and affect the exchange rate. This limits the policy space for a country with existing problems of external debt, which is bound by agreements with international lenders. A full macroeconomic assessment provides information about such impacts.

Estimation of macroeconomic impact by IO modelling

The impact on GDP growth of increased allocation of public spending towards care services expansion can be estimated through IO modelling, as part of the analysis of indirect employment creation discussed in Section 9.1.2. The methodology in UN Women LAC (2022) estimates GDP growth using IO analysis.[48]

As discussed above, one shortcoming of using IO analysis to estimate macroeconomic outcomes is that it rests on a number of binding assumptions which do not allow for dynamic changes in the economy as a result of new policies or shocks. Forecasting of likely changes in macroeconomic variables (economic growth, productivity, public debt or trade balance) in response to a policy intervention can be undertaken through macro models other than IO, which allow for an estimation in a dynamic framework. See Annex 5 for a discussion on other macroeconomic models and how to choose the most appropriate one for the analysis in hand.

10. OPTIONAL EXTENSIONS TO THE ANALYSIS

10.1 Comparing returns on investment in care versus other sectors

Many studies that have applied this policy tool use a comparative framework which allows them to compare the economic returns on increasing public expenditures on care services sectors to the economic returns on spending of similar magnitude on other sectors — primarily physical infrastructure and the construction sector, but also other budget items such as green energy or cash transfers (a list of examples of comparative scenario studies is provided below).

This approach is useful for a number of reasons. First, the policy implications can be interpreted not simply as a matter of increasing expenditures on care services, but determining public budget allocations for competing needs, using diverse policy objectives to justify public spending. Specifically, this is the potential of intended public spending on a particular sector to generate new jobs and decrease unemployment, reduce gender inequalities, alleviate poverty, and promote inclusive growth.

Second, the adoption of a comparative framework also helps to compensate for one of the shortcomings of IO analysis; namely that it is a static analysis and does not allow for identification of possible dynamic changes that may be triggered by an increase in public expenditures. These include changes in prices, wages, public budget deficits and interest rates, which would all have implications for changes in output.

Using a comparative framework for IO analysis of potential industry-specific employment effects helps to compensate for the static nature of this methodology. Since the dynamic changes triggered in public indebtedness, prices and wages are likely to be relatively similar regardless of which sector spending is allocated to, it is justifiable to adopt IO analysis to compare the relative potential of one line of public spending over another in terms of macro-level job creation.

The methodology is straightforward: the results of the costing, i.e. the magnitude of the required public spending to eliminate the care services coverage gap, is used as an input to conduct the IO analysis of employment creation by an alternative sector.

The analysis explores the following questions:

- What would be the magnitude of employment creation if the same amount of public spending were directed at an alternative sector, such as the construction sector for building physical infrastructure?
- What would be the gender composition of employment?
- How do these outcomes compare to the case of public investments of the same magnitude in the care services sectors?

Previous studies show that typically:

- Investing in care services results in substantially larger employment creation (given their higher employment multipliers) than spending of similar magnitude on other sectors (in particular construction as a target of physical infrastructure investments).
- Women's share of new employment is likely to be higher in the case of care services investments than in other sectors (given the disproportionate female share of employment in these sectors), but this depends on the specific country context.

For examples of comparative scenarios, see the following studies:

- Attia (2023) compares outcomes of public investment in ECCE and LTC services vs. construction for Egypt.
- Ilkkaracan et al. (2015) and Kim et al. (2019) compare outcomes of public investment in ECCE services vs. construction vs. cash transfers to poor households for Türkiye.
- De Henau et al. (2017) compare outcomes of public investment in healthcare and LTC services vs. construction for Australia, Denmark, Germany, Italy, Japan and the United States.
- De Henau et al. (2016) compare outcomes of public investment in ECCE and LTC services vs. construction for Brazil, China, India, Indonesia and South Africa.
- Antonopoulos et al. (2010) compare outcomes of public investment in ECCE and LTC services vs. construction vs. green energy for the United States.

10.2 Climate implications of public investment – analysis of carbon impact

Advocacy for investments in care services sectors, with an emphasis on their strong job creation potential, also has implications for the green economy agenda in the sense that care services jobs are also green jobs (see also Box 3). Care jobs, such as a teacher at a childcare centre, a healthcare professional at a neighbourhood clinic or an LTC worker providing home-based services, are local service jobs with low emissions and waste. For example, a study conducted for the United Kingdom finds that the average job in health and care produces 26 times less greenhouse gas (GHG) emissions than a manufacturing job, over 200 times less than an agriculture job and nearly 1,500 times less than a job in oil and gas (Diski 2022, referencing an analysis by the UK Women's Budget Group 2019[49]).

An extension of a comparative analysis can be undertaken to explore the climate implications of increasing public expenditures on care services sectors vs. other sectors by comparing the consequent sectoral emissions.

Methodology notes for analysing carbon impacts

A comparison of emissions under different spending scenarios requires data on emissions disaggregated by sector for the country in question. The OECD statistical database on Greenhouse Gas Footprints provides data on GHG emissions by sector for 38 OECD countries plus 38 non-OECD countries, as well as an aggregate for the 'Rest of the World' (see Box 7).

Data on emissions by sector can be used to derive the emissions multipliers, similar to the employment multipliers discussed in Section 9.1.2 on estimation of indirect employment creation using the input-output (IO) methodology. Here it was stated that using IO analysis, the output and employment increases in the different sectors of the economy

can be estimated when the output of a particular sector (i.e. the care services sector) increases by a certain amount (triggered by the expenditures on care services towards closing of the care coverage gap). In a similar manner, a change in emissions in the different sectors of the economy can be estimated when the output of a particular sector (e.g. the care services sector or the construction sector as a comparison) increases by a certain amount.

Similar to the employer multiplier matrix discussed in Section 9.1.2, the emissions multiplier matrix is a vector of emissions intensity by industry, which is the ratio of total sectoral emissions to final sectoral output. This can be computed using IO sectoral output data and emissions data disaggregated by industry, as in the OECD GHG Emissions database. The emissions multipliers are computed by industry to capture the emissions generated in each industry to produce one additional unit of output. They capture emissions generation via inter-industry input supply and demand.

BOX 7

OECD data on Greenhouse Gas Footprints Indicators[50]

The Greenhouse Gas Footprints (GHGFP) Indicators are calculated by combining the OECD 2023 edition of the OECD Inter-Country Input-Output Tables and other greenhouse gas (GHG) emissions databases. Estimates of GHG emissions by industry are based primarily on Air Emissions Accounts (AEA) and drawing on other sources of GHG emissions statistics. The use of emissions compiled under the system of the Environmental Economic Accounting Framework, which is based on the resident principle, allows calculation of production-based emissions by industry that cover not only CO_2 emissions from fuel consumption but also non-fuel combustion emissions. The database includes annual data on GHG emissions for 76 countries and 67 sectors starting from 2015.

Note: Initiatives are underway to integrate the costs of climate adaptation into care costing, accounting for additional cost items involved in climate resilience and preparedness to reduce the impact of climate risks on caregiving.[51]

PART C

ANNEXES

ANNEX 1
RECENT CARE POLICY FRAMEWORKS AND RESOLUTIONS

The post-Covid-19 pandemic period marked a historical turning point for the attention that care economy policies receive at the multilateral level. Below is a non-exhaustive list of policy papers, frameworks and resolutions by the UN and other multilateral global organizations, in reverse chronological order.

Global resolutions:

- UN GA Resolution A/C.2/80/L.30/Rev.1 Contribution of the care economy to sustainable development
- WHO Resolution 78.16 Accelerating action on the global health and care workforce by 2030
- ILC Resolution V Concerning care work and the care economy
- UN ECOSOC Resolution 2024/4 Promoting care and support systems for social development
- UN HRC Resolution 54/6 Centrality of Care and Support from a Human Rights Perspective
- UN GA Resolution 77/317 to observe an annual International Day of Care and Support on 29 October

Global policy frameworks and reports:

- Seville Platform for Action on Financing Care Systems (2025)
- UN System Policy Paper Transforming Care Systems (2024)
- World Economic Forum White Paper “The Future of the Care Economy” (2024)
- World Bank Policy Paper “Addressing Care to Accelerate Equality” (2024)
- UN Pact for the Future (2024)
- Our Common Agenda, UN Secretary General (2021)[52]
- World Bank Flagship Report on Investing in Childcare (2020)

Regional frameworks and commitments:

- Tlateleco Commitment (ECLAC 2025)
- UN ESCAP Model Framework on Care (2024)
- Buenos Aires Commitment on the Care Society (ECLAC 2022)
- European Care Strategy, European Commission (2022)

ANNEX 2
ASSESSMENT OF ECONOMIC RETURNS – SUPPLY-SIDE STUDIES

There are a variety of approaches to assessing the economic outcomes of care service expansion, reflecting its multiple economic and social returns. Economic returns on care investments take place through both supply- and demand-side channels, as shown in Figure 1 in Part A.

Until relatively recently, most studies and policy discussion focused on the labour supply-side effects of access to care services. For workers with care responsibilities (predominantly women), access to care services alleviates the time constraints on their labour supply. This improves (female) labour force participation and labour market attachment.

Studies which attempt to identify the impact of access to care services on women's labour supply commonly apply an econometric model to estimate the change in the probability of labour force participation (see, for example, Apps and Rees 2004 and 2005; Del Boca and Pasqua 2005; Del Boca and Sauer 2006; Del Boca and Vuri 2007 in Table A2). There are also estimations of potential GDP growth (supply-side growth) consequent to increases in female labour force participation (see, for example, the widely quoted McKinsey 2015 study).

Another supply-side channel becomes operational through expanding childcare and preschool services and the consequent long-run effects on human capabilities enhancement (Figure 1 in Part A). This approach emphasizes the critical role that early childhood care and education services play in the physical, social and mental development of children, preparing them to succeed in school and adult life. Hence, investment in early childhood care services has potential long-run growth- and equity-enhancing effects through improved quality of human capabilities; these can be identified through the internal rates of return and improved social mobility (see, for example, Conti and Heckman 2012; Heckman, Pinto and Savelyev 2013; Heckman et al. 2010 in Table A2). Other supply-side effects pertain to improved labour productivity of workers, particularly those with care responsibilities, through better work-life balance. These productivity-enhancing supply-side effects culminate in supply-side growth.

As outlined in Section 3.2, this methodology focuses on returns on investing in the care economy through demand-side channels. Annex 3 provides a review of the applied studies on demand-side effects of investing in social care on which this tool is based.

TABLE A2

Studies on supply-side effects of investing in care services

Apps, P. and R. Rees (2004). "Fertility, Taxation and Family Policy." *The Scandinavian Journal of Economics* 106, no. 4 (December): 745–63.

______ (2005). "Time Use and the Costs of Children over the Life Cycle." In D. Hamermesh and G. Phann (eds.), *The Economics of Time Use*. London: Elsevier.

Conti, G. and J. Heckman (2012). *The Economics of Child Well-Being*. IZA Discussion Paper No. 6930. Bonn: Institute for the Study of Labour (IZA).

Del Boca, D. and D. Vuri (2007). "The Mismatch between Labour Supply and Child Care." *Journal of Population Economics* 20 (4): 805–832.

Del Boca, D. and R. Sauer (2006). "Life Cycle Employment and Fertility Across Institutional Environments." IZA Discussion Paper No. 2285. Bonn: Institute for the Study of Labour.

Del Boca, D. and S. Pasqua (2005). "Labour Supply and Fertility in Europe and the US." In T. Boeri, D. Del Boca and C. Pissarides (eds.) *Women at Work: An Economic Perspective*. Oxford: Oxford University Press.

Heckman, J., R. Pinto and P.A. Savelyev (2013). "Understanding the Mechanisms through Which an Influential Early Childhood Program Boosted Adult Outcomes." *American Economic Review* 103(6): 2052–2086.

Heckman, J., S. Moon, R. Pinto, P. Savelyev and A. Yavitz (2010). " The Rate of Return to the High Scope Perry Preschool Program." *Journal of Public Economics* 94(1–2): 114–28.

McKinsey (2015). *The Power Of Parity: How Advancing Women's Equality Can Add $12 Trillion To Global Growth*. McKinsey Global Institute (MGI) Report, London and Shanghai: McKinsey Global Institute.

ANNEX 3
REVIEW OF APPLIED POLICY SIMULATIONS

This annex lists the studies on which this policy tool is based: the recent country-level and cross-country applied work by the ILO, UN Women, and various researchers and research institutes around the world since 2010, as summarized in Table A3 below. A list of studies piloting the first edition of the tool is provided in Annex 4, along with additional resources in support of its application.

While these studies share a common research framework, they vary in terms of their analytical methodologies, the care sectors on which they focus, and the measures they use for assessing economic returns on investment. This policy tool builds on the diversity of approaches in these studies to provide the user with various options in determining the exact scope of analytical dimensions, methods and applications.

Applied studies on demand-side effects of investing in social care began in the 2010s. These typically undertook an assessment and costing of the coverage gaps in various sub-sectors of care services and evaluated the economic returns on public investments. This review focuses particularly on the studies by the ILO (2018) and UN Women (2019a, b and c).

Most of the studies listed in Table A3 are conducted on a country basis and focus either on ECCE or LTC, given that these are the two sub-sectors where coverage gaps are widest. ILO (2018) is the most comprehensive study, both in terms of global coverage and the coverage of care service sectors. It assesses the coverage gaps in 45 countries[53] across all levels of education (ECCE, primary, secondary and tertiary) plus healthcare services in terms of both short-term care for the sick and long-term care for older persons and persons with a chronic illness or disability. The care coverage gaps are identified and costed against specific policy targets derived from SDGs for the year 2030. The study finds that for these 45 countries to achieve SDG targets in education and health, they would need to increase expenditures on care services by an additional 3.5 per cent of total GDP. Through an analysis of the employment generation impact, the study shows that an increase in spending of this magnitude has the potential to create over 117 million new jobs directly in the education and healthcare sectors (including ECCE and LTC) and indirectly in other interlinked sectors. More than half (55 per cent) of these jobs are likely to go to women.

UN Women (2019a) covers three countries (South Africa, Türkiye and Uruguay), while UN Women (2019b and c) focus on Kyrgyz Republic and the Republic of North Macedonia respectively. All three studies undertake an assessment of the coverage gap with respect to ECCE services against a policy target of universal coverage. The total cost of closing the ECCE gap is estimated to range from 2.8 per cent of GDP (Uruguay) to 3.7 per cent of GDP (Türkiye). The additional direct and indirect jobs generation would increase employment by 3.0 percentage points at a minimum (Kyrgyz Republic) to as much as 6.3 percentage points (South Africa), with at least two-thirds of the new jobs going to women. The fiscal returns (increase in tax revenues as a result of new employment and income generation) are estimated to be substantial, with the initial outlay of expenditures being self-financed at a rate ranging from 26 per cent (Kyrgyz Republic) to as much as 51 per cent (Uruguay).

As seen in Table A3, under 'economic returns assessed', some of the studies present further analysis of the demand-side economic outcomes of investing in care beyond those of employment generation, such as the impact on income distribution and poverty reduction, or the impact on macroeconomic growth and productivity.

TABLE A3

Applied demand-side studies on investing in care services

Study	Country	Care sector	Assessment and costing of care coverage gaps (CCG)	Economic returns assessed	Methodology
Antonopoulos and Kim (2008), Levy Economics Institute	South Africa	ECCE and HIV patient care (home- and community-based healthcare for permanently or long-term ill)	• CCG assessment on the basis of no. of children • Costing on the basis of no. of employees to serve the children	Jobs generation and distribution by gender; income generation and distribution by gender, education and HH income; poverty reduction; economic growth	• Social accounting matrix (SAM), gender-disaggregated • Microsimulation
Antonopoulos et al. (2010), Levy Economics Institute	US	ECCE and home-based healthcare	• No CCG assessment or costing • Arbitrary assumption of US$50 billion	Jobs generation and distribution by gender; income generation and distribution by gender, education and HH income; poverty reduction	• Input-output analysis • Microsimulation • Macro growth • Comparison to physical infrastructure spending and green energy spending
Ilkkaracan, Kim and Kaya (2015), Istanbul Technical University and Levy Economics Institute (also published by ILO, UNDP and UN Women as research report and policy brief)	Türkiye	ECCE	• Detailed CCG and cost assessment based on nationally contextualized policy targets and local field survey	Jobs generation and distribution by gender; income generation and distribution by gender, education and HH income; poverty reduction	• First study to assess care services coverage gaps and required public spending costs based on national data • Input-output analysis • Microsimulation • Comparison to physical infrastructure spending and to social transfer spending
Kim, Ilkkaracan and Kaya (2019)	Türkiye	ECCE	• CCG and cost assessment based on Ilkkaracan, Kim and Kaya (2015)	Jobs generation and distribution by gender; gender employment and wage gap; gender jobs segregation	• Input-output analysis • Microsimulation • Comparison to physical infrastructure spending and to social transfer spending
De Henau et al. (2016), ITUC	Australia, Denmark, Germany, Italy, Japan, US	ECCE and long-term care	• No CCG assessment or costing • Arbitrary assumption of 2% GDP	Jobs generation and distribution by gender; growth	• Input-output analysis • Cambridge-Alphametrics macro-simulation model (CAM) • Comparison to construction spending
De Henau, Himmelweit and Perrons (2017), ITUC	Brazil, China, India, Indonesia, South Africa	Health and social care	• No CCG assessmentor costing • Arbitrary assumption of 2% GDP	Jobs generation and distribution by gender; growth	• Input-output analysis • Comparison to construction spending
Bargawi and Cozzi (2017)	Brazil, China, India, Indonesia, South Africa	Health and social care	• No CCG assessment or costing • Arbitrary assumption of 2% GDP	Jobs generation and distribution by gender; growth	• Input-output analysis • Comparison to construction spending
Bargawi and Cozzi (2017)	Eurozone countries and the UK	ECCE		Jobs generation and distribution by gender; economic growth, public budget deficit and debt	• Cambridge-Alphametrics macro-simulation model (CAM)
ILO (2018) and ILO background paper by Ilkkaracan and Kim (2019)	45 countries	ECCE, primary, secondary and tertiary education; healthcare; long-term care	• CCG and cost assessment based on policy targets as set by SDGs and analysis of cross-country data	Jobs generation and distribution by gender; short-run fiscal sustainability via tax revenues	• Includes assessment of care services coverage gaps and costs • Input-output analysis
De Henau et al., UN Women (2019a)	South Africa, Türkiye and Uruguay	ECCE	• CGG assessment and costing based on national data	Jobs generation and distribution by gender; short-run fiscal sustainability via tax revenues	• Includes assessment of care services coverage gaps and costs • Input-output analysis
Ilkkaracan and Kim, UN Women (2019b)	Kyrgyz Republic	ECCE	• CCG and cost assessment based on national policy targets and data	Jobs generation and distribution by gender; short-run fiscal sustainability	• Includes assessment of care services coverage gaps and costs • Input-output analysis
De Henau and Mojsoska-Blazevski, UN Women (2019c)	Republic of North Macedonia	ECCE	• CCG and cost assessment based on national policy targets and data	Jobs generation and distribution by gender; short-run fiscal sustainability	• Includes assessment of care services coverage gaps and costs • Input-output analysis

Study	Country	Care sector	Assessment and costing of care coverage gaps (CCG)	Economic returns assessed	Methodology
Zacharias et al. (2021)	Ghana and Tanzania	ECCE and physical infrastructure (the public road network)	• CCG and cost assessment based on national policy targets and data	Growth, public debt, trade deficit; tax revenues; employment creation; and time and income poverty reduction by gender	• Social accounting matrix (SAM) • Competitive general equilibrium (CGE) modelling • Microsimulation using combined time- and income survey micro data
Ilkkaracan et al. (2021)	Türkiye	ECCE	• CCG and cost assessment based on updated Ilkkaracan, Kim and Kaya (2015)	Jobs generation and distribution by gender; income generation and distribution by gender, education and HH income; impact on time constraints and time- and income poverty reduction	• Input-output analysis • Microsimulation using combined time- and income survey micro data
Onaran, Oyvat and Fotopoulou (2022)	UK	ECCE/education	• No CCG and cost assessment; exploration of reactions of macroeconomic outcomes to a hypothetical stimulus of increased public spending on care services	Employment, growth, productivity	• Post-Keynesian macro modelling and simulation
Oyvat and Onaran (2022)	South Korea	ECCE/education			
Onaran and Oyvat (2023)	Chile, Colombia, India, Indonesia, Philippines, S. Africa, S. Korea, Türkiye	ECCE/education, healthcare, LTC and green infrastructure			
Gultekin, Ilkkaracan, Bayar and Ozcanli (2024)	Türkiye	ECCE, primary and secondary education, healthcare and long-term care services	• Detailed CCG and cost assessment based on nationally contextualized policy targets	Direct and indirect employment creation	• Application of the draft UN Women-ILO Policy Tool for assessment of care deficits, costs and direct employment creation • Input-output analysis for estimation of indirect employment creation
UN Women (2024), Consolidated Report on the Pilot Implementation of the 1st edition of the UN Women-ILO Policy Tool	Argentina, Ethiopia, Egypt, Morocco, Nepal	Different sectors as chosen by each country: ECCE, primary and secondary education, healthcare and long-term care services	• Detailed CCG and cost assessment based on nationally contextualized policy targets	Direct and indirect employment creation (except for Argentina, which also applied the tool at province level and only included estimates for direct employment creation); also, depending on the country choice, tax revenue generation and GDP growth effects	• Application of the UN Women-ILO policy tool 1st edition for assessment of care deficits, costs and direct employment creation • Input-output analysis for estimation of indirect employment creation

ANNEX 4
RESOURCES TO SUPPORT APPLICATION OF THE TOOL

It is highly recommended to review the resources below in the initial planning phase and to support the process of implementation. (See also the applied country studies on investing in care services listed in Annex 3, Table A3, which establish the basis of the methodology of this tool.)

UN Women-ILO policy tool: UN Women and ILO (2021). *A Guide to Public Investments in the Care Economy: Policy Support Tool for Estimating Care Deficits, Investment Costs and Economic Returns*. New York: UN Women.

UN Women LAC regional office, regional policy tool: UN Women LAC (2022). *Methodology to estimate the costs and economic impacts of implementing care services in Latin America and the Caribbean*. Mexico: UN Women.

Consolidated report from pilot applications of the UN Women-ILO policy tool: UN Women and ILO (2023). *A Guide to Public Investments in the Care Economy: Policy Support Tool for Estimating Care Deficits, Investment Costs and Economic Returns. Consolidated Report.* Geneva and New York: ILO and UN Women.

UN system policy guidance: UN (2024). *Transforming Care Systems: In the Context of the Sustainable Development Goals and Our Common Agenda.* New York: United Nations.

ILO research paper on investing in care services and economic outcomes for 45 countries: Ilkkaracan, I. and K. Kim (2019). *The Employment Generation Impact of Meeting SDG Targets in Early Childhood Care, Education, Health and Long-Term Care in 45 Countries*. ILO Research Paper. Geneva: International Labour Organization.

ILO Investment Care Policy Simulator: ILO (2022). ILO Global Care Policy Portal – Care Policy Investment Simulator. *The ILO Care Policy Investment Simulator calculates the investment requirements in four care policy areas and the related employment and gender equality benefits for 118 countries. Available at: https://webapps.ilo.org/globalcare/simulator/1?language=en*

UN Women policy tool on fiscal space: UN Women (2025). *Engendering Fiscal Space: A Policy Framework for Financing Gender Equality.* New York: UN Women.

Also see Table A4 below for country reports on pilot applications of the UN Women-ILO policy tool.

TABLE A4

Country reports on pilot applications of the UN Women-ILO policy tool

Argentina province-level	Méndez Santolaria, N. and C. Rodríguez Enríquez (2023a). *Costing Care Services and Estimating Employment Creation: The Case of Chaco Province*. UN Women–ILO Joint Programme. Buenos Aires: UN Women and ILO. ______ (2023b). *Costing Care Services and Estimating Employment Creation: The Case of Santa Fe Province*. UN Women–ILO Joint Programme. Buenos Aires: UN Women and ILO.
Argentina country-level	Marzonetto, G., N. Méndez Santolaria, M.L. Ojeda, M. Pérez Neira, M.P. Ramos, C. Rodríguez Enríquez and C.A. Romero (2023). *Public investment in care services in Argentina. Coverage of deficits, employment generation, fiscal efforts and economic impacts*. Buenos Aires: ILO Country Office Argentina.
Ethiopia	Gebreselassie, K. (2023). *Applying the Policy Tool "A Guide to Public Investments in the Care Economy: Policy Support Tool for Estimating Care Deficits, Investment Costs and Economic Returns" to the case of ECCE in Ethiopia*. Addis Ababa: UN Women.
Egypt	Attia, S. (2023). *Public Investments in Social Care Services in Egypt: Estimating Gaps, Investment Costs and Economic Returns in Early Childhood Care and Education (ECCE) and Elderly Long-Term Care (ELTC) Sectors*. Cairo: UN Women and Egypt's Ministry for Social Solidarity (MoSS).
Morocco	Ragbi, Z., T. Bouba, L. Abbad, L. Rhoufrani and M.O. Noussairi (2023). *Promoting decent employment for women through investments in the care economy: What about the potential of preschool?* Rabat: Ministry of Economy and Finance, Directorate of Studies and Financial Forecasting, and UN Women.
Nepal	Bhatta, B. and A. Pope (2023). *Public Investment in Care Services in Nepal: An Estimation of Care Deficit and Investment Costs in the Education and Health Sectors*. UN Women–ILO Joint Programme. Kathmandu: UN Women, ILO and Institute for Integrated Development Studies (IDDS). Bhatta, B., B. Haque Khondker and A. Pope (2023). *Public Investments in Nepal's Care Economy: An Estimation of Care Deficit, Investment Costs and Economic Returns in the Education and Health Sectors*. Policy Brief. Kathmandu: Government of Nepal National Planning Commission, ILO and UN Women.

ANNEX 5
MACRO MODELLING – ALTERNATIVES TO IO ANALYSIS

Applied studies on the demand-side effects of investing in care services (reviewed in Annex 3) have used various macroeconomic models. Some examples are as follows:

- The Cambridge Alphametrics Model (CAM) used in Bargawi and Cozzi (2017) is a non-equilibrium structuralist macroeconomic model for Europe, to explore the effects of different types of fiscal policy (public spending) on employment generation, distribution by gender, growth, public budget deficit and debt.
- A competitive general equilibrium (CGE) model with a social accounting matrix (SAM) is used in Zacharias et al. (2019). The CGE-SAM provides a much more comprehensive source of information than the IO table. The closure rules for the CGE model here follow a Keynesian framework, where employment is determined by demand (hence allowing for unemployment) and the adjustment of savings to exogenous investment takes place through changes in output (rather than changes in savings rates). See Zacharias et al. 2019, p.61–64 for a discussion of the CGE-SAM model.
- A gendered, structuralist, post-Keynesian demand-led model is used in Onaran, Oyvat and Fotopoulou (2022) for the United Kingdom; Oyvat and Onaran (2022) for South Korea; and Onaran and Oyvat (2023) for eight Global South countries. The model builds on prior work by Onaran, Oyvat and Fotopoulou (2019), extending it with an endogenous labour supply and wage bargaining model. Empirically, they use structural vector autoregression (SVAR) analysis to estimate the impact of various policy interventions (an increase in social care spending, and an increase in female wages closing the gender pay gap) on aggregate output and employment. See Onaran and Oyvat (2023) p.12–29 and Appendix IV for the model and estimation methodology.

How to choose the most relevant macro modelling method for the task

Different macro models display different representations of the economy. The choice of macroeconomic model depends on a number of factors, such as the model's theoretical underpinnings and assumptions, and hence its appropriateness for the analytical task in hand, the availability of data and calibrated models for that particular country/region, and the trade-offs involved in the time/costs of building a sophisticated macroeconomic model.

Macro models vary in terms of their specific assumptions about the behaviour of the economy. These assumptions are based on the theoretical framework against which they are developed. There are two broad macroeconomic theoretical frameworks: classical (mainstream) macroeconomics and non-mainstream (mainly Keynesian or structuralist) macroeconomics. Mainstream (classical) macroeconomic models make a number of binding assumptions, such as clearing markets under competitive free markets (for example, the assumption of a clearing labour market and hence zero unemployment in free competitive labour markets). By contrast, non-mainstream models, such as Keynesian or structuralist macroeconomic models, strongly question these (simplifying) assumptions and build models that adopt a more empirical approach to modelling. The three macro models listed above, as adopted by the applied studies on investing in care, are examples of non-mainstream models.

These non-mainstream macro models are more appropriate for the task this policy tool aims to address, namely analysis of the economic impact of increased fiscal spending on care services expansion. Such a proposal itself rests on underlying assumptions regarding the inability of free markets to create jobs on their own, and the need for public intervention in care provisioning, where care is seen as a merit good (or even a public good) with strong externalities. Hence an analysis of the economic returns on investing in care is better reconciled within the framework of non-mainstream macroeconomic models.

The choice of macroeconomic models also depends in part on availability of existing models for a given country or region. Building a macroeconomic model from scratch is a time-consuming process that requires specific expertise and hence can be a costly undertaking. The CAM used in the Bargawi and Cozzi (2017) study on EU countries, for example, uses an existing model that has been calibrated for the EU economy.

The CGE-SAM model is a time-intensive and costly modelling option, which requires the use of multiple sources of data to build a social accounting matrix (SAM). A SAM is a double-entry table, extended from an IO table, that provides further detailed information about the economy. Its columns and rows record the transactions that take place between productive sectors, factors of production (capital and labour), institutions (households, firms and government), the capital account (the financial side of the macroeconomy) and the rest of the world (imports, exports and other financial flows) These accounts are symmetrically arranged (in rows and columns), forming a square matrix that traces the origin and destination of expenditures and income received.

In addition to providing a consistent framework of national accounts, a SAM incorporates the distributional and social dimensions of an economy. At an aggregate level, a SAM shows how total income is distributed between capital and labour. At a disaggregated level, it can provide a lot more detail. For example, labour, a factor of production, can be specified as being male or female, skilled or unskilled; each industry can be described by the types and amounts of inputs used, including the female/male intensity of labour employed; or the various household types depending on socioeconomic characteristics, such as poor or non-poor households (Antonopoulos and Kim 2008, p.23–24). As such, a SAM-based model allows for a great deal of sophisticated analysis, particularly in terms of income distributional outcomes. Nevertheless, the costs involved (in terms of time and expertise) mean it may only be a practical choice when there is already an appropriate SAM that has been developed for that country or region. Zacharias et al. (2019), one of the studies included in the review in Annex 3, used the existing SAM for Ghana (2013) and Tanzania (2017) to build a CGE-SAM model, making some slight adjustments for their purposes (see Zacharias et al. 2019, p.50–51).

ANNEX 6
COSTINGS FORMULAE

BOX A6.1

Assessment of care services coverage gaps

Coverage gap in terms of additional care receivers to be covered by services:

$$CCG_{agegroup} = (P_{agegroup} \times t.c.r._{agegroup}) - (P_{agegroup} \times c.c.r._{agegroup}) \quad (1a)$$

or

$$CCG_{agegroup} = (P_{agegroup} \times t.c.r._{agegroup}) - (CSB_{agegroup}) \quad (1b)$$

$$\text{Total } CCG = \text{Sum of } CCG \text{ over all age groups}$$

$CCG_{agegroup}$ = Care Coverage Gap per age group (measured in no. of additional people to be covered)

P = Population

t.c.r. = target coverage rate (desired share of care receivers in the total population)

c.c.r. = current coverage rate (prevailing share of care receivers in the total population)

CSB = No. of current service receivers

Coverage gap in terms of quality of services (example of):

$$CCQG_{agegroup} = CSB_{agegroup}/t.s.r._{agegroup} - CSP_{agegroup} \quad (2)$$

$$\text{Total } CCQG = \text{Sum of } CCQG \text{ over all age groups}$$

CCQG = Care Coverage Quality Gap (measured in no. of additional service providers required)

t.s.r. = target service ratio = No. of service receivers per service provider

CSB = No. of current service receivers

CSP = No. of current service providers

BOX A6.2

Estimation of the costs of eliminating care services coverage gaps

The average annual prevailing cost of care services provisioning per care receiver:

$$\textit{Current Cost per Care Receiver} = \frac{\textit{Current Annual Sectoral Expenditures}}{\textit{Current No. of Care Receivers}} \qquad (3)$$

$$\begin{gathered}\textit{Total Cost}\\ = \\ \textit{(per care receiver annual cost adjusted for service and employment quality)}\\ x \\ \textit{(additional number of care receivers to be covered)}\end{gathered} \qquad (4)$$

BOX A6.3

Estimation of coverage gaps in education

Coverage gap in ECCE (CG-ECCE) would be given by the following:

$$\begin{gathered}\textit{CG-ECCE}\\ = \\ (\textit{Child Population}_{agegroup} \times \textit{Target Enrolment Rate}_{agegroup}) - \textit{Enrolled Children}_{agegroup}\end{gathered} \qquad (5a)$$

Coverage Gaps in primary and secondary education (CG-Primary and CG-Secondary) assume a target enrolment rate of 100 per cent. They would be given by the following:

$$\textit{CG-Primary} = \textit{Child Population}_{primary} - \textit{Enrolled Students}_{primary} \qquad (5b)$$

$$\textit{CG-Secondary} = \textit{Child Population}_{secondary} - \textit{EnrolledStudents}_{secondary} \qquad (5c)$$

$\textit{Child Population}_{primary}$ = number of children of primary school age

$\textit{Child Population}_{secondary}$ = number of children of secondary school age

BOX A6.4

Estimation of the costs of eliminating coverage gaps in education

$$\text{Total Wage and Salary Expenditures for Teaching Staff}_i = \frac{CG_i}{\text{Target Child/Student per Teacher Ratio}_i} \times \text{Target Annual Salary per Teacher}_i \qquad (6)$$

CG: coverage gap for age group $_i$

$_i$: age groups such that $_i$ = ECCE 0-2; ECCE 3 to mandatory school age; primary or secondary age groups

The overhead expenditures would be given by the following:

$$\text{Total Overhead Expenditures}_i = \frac{\text{Existing Overhead Expenditures}_i}{\text{Total No. of Children/Students Enrolled Full-Time}_i} \times CG_i \qquad (7)$$

Total costs would be the sum of these two components:

$$\text{Cost of the } CG_i = \text{Total Wage and Salary Expenditures for Teaching Staff}_i + \text{Total Overhead Expenditures}_i \qquad (8)$$

BOX A6.5

Estimation of the coverage gaps and costs of eliminating coverage gaps in healthcare services

Coverage gap in healthcare services:

$$\text{Healthcare Coverage Gap} = \text{DMN} + \text{HWOC} \qquad (9)$$

$$\text{DMN} = \text{Population in 1000's} \times 4.45\ \text{Dctr/Mdwv/Nrs} - \text{Existing Employment of Dctr/Mdwv/Nrs} \qquad (10)$$

HWOC = DMN x Country Fixed Ratio

$$\text{Country Fixed Ratio (CFR)} = \frac{\text{Existing Employment of Health Workers in Other Cadres}}{\text{Existing Employment of Dctr/Mdwv/Nrs}} \qquad (11)$$

Costs of eliminating coverage gaps in healthcare services:

$$\text{Total Wage and Salary Costs for Additional Health Workers} = (\text{DMN}_{category} \times \text{Target Annual Salary}_{category}) + (\text{HWOC} \times \text{Target Annual Salary}_{average}) \qquad (12)$$

$$\text{Total Overhead Expenditures} = \frac{\text{Current Overhead Expenditures}}{\text{Current No. of Health Workers}} \times \text{No. of Additional Health Workers} \qquad (13)$$

Current overhead expenditures (non-wage/salary health expenditures) =
Current total health expenditures – Current wage/salary payments to health personnel

Total costs would be the sum of the two components in equations 13 and 14:

$$\text{Cost of the Healthcare Coverage Gap} = \text{Total Wage and Salary Costs for Additional Health Workers} + \text{Total Overhead Expenditures for Additional Health Workers} \qquad (14)$$

BOX A6.6

Estimation of coverage gaps and costs of eliminating coverage gaps in long-term care (LTC) services

Coverage gap in LTC services:

$$\text{LTC Coverage Gap (Additional LTC Receivers)} = (\text{65+ Population} \times \text{Policy Target Coverage Rate (12.4 per cent)}) - (\text{Current 65+ Population who are already LTC Receivers}) \quad (15)$$

$$\text{LTC Coverage Gap (Additional FTE LTC Workers)} = (\text{65+ Population in 100s}) \times (\text{Target 65+ Population-to-LTC Worker Ratio (4.2)}) - (\text{Current Employment of LTC Workers}) \quad (16)$$

Costs of eliminating coverage gaps in LTC services:

$$\text{Cost of LTC Coverage Gap} = (\text{Adjusted Cost per LTC Care Receiver}) \times (\text{Additional LTC Receivers}) \quad (17)$$

where

$$\text{Adjusted Cost per LTC Care Receiver} = \frac{\text{Total Public Expenditures (+ wage adjustment)}}{\text{No. of Existing LTC Receivers}} \quad (18)$$

$$\text{Cost of LTC Coverage Gap} = \text{Additional FTE LTC Workers required} \times \text{Target Annual Salary FTE LTC Worker} + (\text{any overhead costs?}) \quad (19)$$

BOX A6.7

Estimation of total employment creation (direct, indirect and induced employment)

$$T.E. = D.E. + I.D.E. + I.E. \quad (20)$$

T.E. = Total employment creation (no. of new jobs)

D.E. = Direct employment (new jobs in the care sectors created as a direct result of increased spending on care services expansion, both care workers D.E.cw and non-care workers D.E.ncw employed in the care sectors)

I.D.E. = Indirect employment (new jobs in other sectors created through backward linkages)

I.E. = Induced employment (new jobs in the care or other sectors created through increased household spending due to new labour earnings by newly employed workers).

Direct employment creation *(D.E.)* is based on the following. The care coverage gap *(CCG)* in equation (1) provides the additional number of service receivers to be covered by services. This is divided by the target care care receiver to care provider ratio *(t.s.r.)* to determine the necessary number of additional care workers to close the *CCG*.

$$\text{No. of additional service providers to close the CCG} = CCG/t.s.r. \quad (21)$$

The care coverage quality gap *(CCQG)* in equation (2) provides the number of additional service providers necessary to achieve the t.s.r. Hence the total number of care worker jobs through direct employment creation $(D.E._{cw})$ will be given by the sum of the two:

$$D.E._{cw} = \text{No. of additional service providers to close the CCG} + CCQG \quad (22)$$

To find the number of non-care workers (administrative and support staff employed in care sectors), we use the existing ratio of non-care worker per care worker *(ncw/cw)* in the relevant sector (education, healthcare or LTC). Note that this ratio can be revised upward if necessary:

$$D.E._{ncw} = D.E._{cw} \times (ncw/cw) \quad (23)$$

Total direct employment creation in the care services sectors entails the sum of care workers $(D.E._{cw})$ and non-care workers $(D.E._{ncw})$:

$$D.E. = D.E._{cw} + D.E._{ncw} \quad (24)$$

ANNEX 7
TEMPLATE FOR PRESENTATION OF RESULTS

TABLE A7.1

Profile of the study in (country or province/region)

<table>
<tr><th colspan="2">Care services sectors covered</th><th colspan="2">Economic returns estimated</th><th>Methodology and data</th></tr>
<tr><td>ECCE 0-2</td><td>?</td><td colspan="3">Employment creation</td></tr>
<tr><td>ECCE 3-5
(or mandatory school age)</td><td>?</td><td>Direct</td><td>x</td><td>Policy tool</td></tr>
<tr><td>Primary</td><td>?</td><td>Indirect</td><td>?</td><td>IO</td></tr>
<tr><td>Secondary</td><td>?</td><td>Induced</td><td>?</td><td>IO</td></tr>
<tr><td>Healthcare</td><td>?</td><td>Tax revenue generation</td><td>?</td><td>Policy tool or IO</td></tr>
<tr><td>Long-term care</td><td>?</td><td>GDP growth</td><td>?</td><td></td></tr>
<tr><td>Other specific groups of care receivers</td><td>?</td><td>Other macroeconomic indicators</td><td>?</td><td rowspan="2">IO model or other macroeconomic model?</td></tr>
<tr><td colspan="2">Extended applications</td><td>Earnings generation and distribution</td><td>?</td></tr>
<tr><td>Comparison to other sectors/lines of budgetary spending</td><td>• Construction?
• Other?</td><td>Time poverty</td><td>?</td><td>Microsimulation modelling?</td></tr>
<tr><td>Carbon emissions impact</td><td>?</td><td>Other?</td><td>?</td><td>Microsimulation modelling?</td></tr>
<tr><td>No. of scenarios</td><td>• Short-run
• Medium-run
• Universal care (high-road)</td><td>?</td><td>?</td><td>?</td></tr>
</table>

TABLE A7.2

Simulation scenarios and policy targets

<table>
<tr><th rowspan="3"></th><th colspan="4">Coverage targets</th><th colspan="4">Quality targets
• Care receiver to care provider ratio;
• Annual care provider salary (% of current prevailing salary);
• Other service and employment quality targets?</th></tr>
<tr><th>Current*</th><th colspan="3">Target</th><th>Current*</th><th colspan="3">Target</th></tr>
<tr><th></th><th>Short-run**</th><th>Medium-run**</th><th>High-road**</th><th></th><th>Short-run**</th><th>Medium-run**</th><th>High-road**</th></tr>
<tr><td>ECCE 0-2</td><td colspan="3">enrolment rate</td><td>50%</td><td colspan="3" rowspan="4">• children per teacher;
• support staff per teacher;
• teacher salary (% of prevailing salary)
• other service and employment quality targets?</td><td rowspan="4">?</td></tr>
<tr><td>ECCE 3-5 (or mandatory school age)</td><td colspan="3">enrolment rate</td><td>100%</td></tr>
<tr><td>Primary education</td><td colspan="3">enrolment rate</td><td>100%</td></tr>
<tr><td>Secondary education</td><td colspan="3">enrolment rate</td><td>100%</td></tr>
<tr><td>Healthcare</td><td colspan="3">• DNM per 1,000 population;
• HWOC per DNM</td><td>?</td><td colspan="3">• DNM salaries; HWOC salaries;
• other service and employment quality targets?</td><td>?</td></tr>
<tr><td>Long-term care</td><td colspan="3">% of 65+ population covered by LTC services</td><td>?</td><td colspan="3">• No 65+ population per LTC worker;
• LTC worker salaries;
• other service and employment quality targets?</td><td>?</td></tr>
<tr><td>Other specific groups of care receivers</td><td colspan="3"></td><td></td><td colspan="3"></td><td></td></tr>
</table>

* Add notes under the table on sources of data (for current coverage rates and quality indicators).

TABLE A7.3a

Assessment of care deficits, costs and employment generation

CARE SECTOR	Coverage gap No of additional care beneficiaries to be covered *(% of population of potential care beneficiaries)*	Coverage gap No of additional caregivers required *(% of current caregivers)*	Costs *(currency and year)*	Costs as % of GDP *(year)*	Direct employment creation+ No of direct jobs *(women's share %)*	Indirect employment++ creation No of indirect jobs *(women's share %)*	Total employment creation *(women's share %)*	New employment creation As % employment in the country in *(year)*
ECCE					ECCE			
Current								
Short/medium-run*								
High-road**								
PRIMARY/SECONDARY EDUCATION					PRIMARY/SECONDARY EDUCATION			
Current								
Short/medium-run*								
High-road**								
HEALTHCARE					HEALTHCARE			
Current								
Short/medium-run*								
High-road**								
LONG-TERM CARE					LONG-TERM CARE			
Current								
Short/medium-run*								
High-road**								

\+ Breakdown of direct employment by different categories of workers, i.e. direct care workers, indirect care workers; doctors/nurses/midwives vs. health workers in other cadres vs. admin and support workers in healthcare, etc.

++ State induced employment separately if it is included in the IO estimation.

*, ** Add notes under the table on scenario specifications, policy targets, assumptions, methodologies, etc., as appropriate (see Table A7.3b below as an example).

TABLE A7.3b

Sample presentation of results – assessment of care services coverage gaps, costs and employment creation in Türkiye

CARE SECTOR	**Coverage gap** No of additional care beneficiaries to be covered *(% of population of potential care beneficiaries)*	**Coverage gap** No of additional caregivers required *(% of current caregivers)*	**Costs** *(Turkish Lira [TRY]; 2015 or 2019)*	**Costs as % of GDP** *(2015 or 2019)*	**Direct employment**	**Indirect employment++**	**Total employment creation** *(women's share %)*	**New employment creation** As % employment in the country in *(2019)*
ECCE					ECCE			
Scenario 1*	2.3 million children	–	29.8 billion TRY (2015)	1.18	545,000	168,000	720,000 (72.5%)	2.9
Scenario 2**	4.3 million children (55.2)	–	82.8 billion TRY (2019)	1.92	913,979	687,000	1,600,979 (70.5%)	5.7
Primary/secondary education	1.5 million children (10.1)	–	15.7 billion TRY (2019)	0.37	92,790	130,000	222,790 (53.1%)	0.8
TOTAL EDUCATION	**5.8 million children (25.4)**		**98.5 billion TRY (2019)**	**2.28**	**1,006,769**	**817,000**	**1,823,769 (68.4%)**	**6.5**
HEALTHCARE***					HEALTHCARE***			
Doctors/nurses/ midwives (DNM)	–	2331,229 DNM (55.7)						
Health workers in other cadres (HWOC)		138,737 HWOC (55.7)						
Non-care workers in healthcare (NCWHC)		207,181 NCWHC						
TOTAL HEALTHCARE (HC)		**577,147 HC sector workers**	**47.8 billion TRY (2019)**	**1.11**	**577.147**	**296.000**	**873.147 (52.6%)**	**3.1**
LONG-TERM CARE (LTC)* **	–	**72,545 LTC workers (840.5)**						
DIRECT LTC WORKERS					DIRECT LTC WORKERS			
Other LTC workers (social worker, physiotherapist, psychologist, nutritionist, etc.)		**83,910 other LTC workers**						
TOTAL LTC		**156,455 workers**	**5.11 billion TRY (2019)**	**0.12**	**156.455**	**–**	**156,455 (67.4%)**	**0.9**

Source: Gültekin, Ilkkaracan, Bayar and Ozcanlı (2024)

\+ Coverage gap is assessed as share of children in the relevant age group in ECCE, primary and secondary school; as share of current employment of DNM and HWOC in healthcare; as share of current employment of LTC workers in LTC.

++ Estimation of indirect employment through IO analysis does not include induced employment in Scenario 1 ECCE; in all other cases it includes induced employment. The IO analysis for ECCE is conducted on the basis of the synthetic sector approach in Scenario 1 ECCE; in all other cases it is based on injections into the education sector and healthcare and social services sector as it exists in IO Table 2012 for Türkıye.

* ECCE Scenario 1 is based on a policy target of OECD average ECCE enrolment rates by age group.

** ECCE Scenario 2 is based on the high-road SDG-based policy targets in ILO (2018) of 50 per cent enrolment rate for age under 3, and 100 per cent enrolment rate for age 3 to mandatory school age (under 6).

*** For healthcare and LTC services, the simulation was based on a high-road scenario only.

REFERENCES

Antonopoulos, R. and K. Kim (2008). *Impact of Employment Guarantee Program on Gender Equality and Pro-Poor Economic Development in South Africa: Scaling Up the Expanded Public Works Program, Social Sector Intervention Proposal.* Research Project No. 34. United Nations Development Program and Levy Economics Institute of Bard College.

Antonopoulos, R., K. Kim, T. Masterson and A. Zacharias (2010). *Investing in Care: A Strategy for Effective and Equitable Job Creation.* Levy Economics Institute Working Paper No. 610. New York: Bard College.

Attia, S. (2023). *Public Investments in Social Care Services in Egypt: Estimating Gaps, Investment Costs and Economic Returns in Early Childhood Care and Education (ECCE) and Elderly Long-Term Care (ELTC) Sectors.* Cairo: UN Women and Egypt's Ministry for Social Solidarity (MoSS).

Bargawi, H. and G. Cozzi. (2017). "Engendering Economic Recovery Alternatives to Austerity in Europe." *Feminist Economics* 23(4): 225–249.

De Henau, J., S. Himmelweit and D. Perrons (2017). *Investing in the Care Economy: Simulating Employment Effects by Gender in Countries in Emerging Economies.* Women's Budget Group Report to the International Trade Union Confederation, Brussels, January.

De Henau, J., S. Himmelweit, Z. Lapniewska and D. Perrons (2016). *Investing in the Care Economy: A Gender Analysis of Employment Stimulus in Seven OECD countries.* Women's Budget Group Report to the International Trade Union Confederation, Brussels, March.

Diski, R. (2022). *A Green and Caring Economy. UK Feminist Green Deal Report.* Feminist Green Deal, UK Women's Budget Group and WEN (Women's Environmental Network).

Esquivel, V. (2014). "What is a transformative approach to care, and why do we need it?" *Gender and Development* 22 (3): 423–439.

Gultekin, D., I. Ilkkaracan, A.A. Bayar and P. Ozcanli (2024). Investing in the care services sectors for employment generation and gender-inclusive growth: the case of Turkey. *New Perspectives on Turkey,* 1–25.

Ilkkaracan, I. and K. Kim (2019). *The Employment Generation Impact of Meeting SDG Targets in Early Childhood Care, Education, Health and Long-Term Care in 45 Countries.* ILO Research Paper. Geneva: International Labour Organization.

Ilkkaracan, I., K. Kim and T. Kaya (2015). *The Impact of Public Investment in Social Care Services on Employment, Gender Equality and Poverty: The Turkish Case.* Istanbul and New York: Istanbul Technical University Women's Studies Centre and the Levy Economics Institute at Bard College.

Ilkkaracan, I., K. Kim, T. Masterson, E. Memis and A. Zacharias (2021). "The Impact of Investing in Social Care on Employment Generation Time- and Income-Poverty and Gender Gaps: A Macro-Micro Policy Simulation for Turkey." *World Development* 144.

International Labour Organization (ILO) (2020). *A Gender-responsive Employment Recovery: Building back Fairer. Policy Brief.* Geneva: International Labour Organization.

______ (2018). *Care work and care jobs for the future of decent work.* Geneva: International Labour Organization.

______ (2013). *Meeting of Experts on Policy Guidelines on the Promotion of Decent Work for Early Childhood Education Personnel.* Geneva: International Labour Organization.

______ (2014). *World Social Protection Report 2014/15,* Geneva: International Labour Organization.

Kim, K., I. Ilkkaracan and T. Kaya (2019). "Investing in Social Care Infrastructure and Employment Generation. A Distributional Analysis of the Care Economy in Turkey." *Journal of Policy Modelling* 41(6): 1210–1229.

Kim, K. (2011). "Ex-ante Evaluation of a Targeted Job Program: Hypothetical Integration in a Social Accounting Matrix of South Africa." *Economic Modelling* 28: 2683–2690.

Kum, H. and T.N. Masterson (2010). "Statistical Matching Using Propensity Scores: Theory and Application to the Analysis of the Distribution of Income and Wealth." *Journal of Economic and Social Measurement* 35(3): 177–196.

Lipszyc, B., E. Sail and A. Xavier (2012). *Long-term care: need, use and expenditure in the EU-27.* Economic Papers 469. Brussels: European Commission, Directorate-General for Economic and Financial Affairs.

Masterson, T. (2018). *Simulations of Employment for Individuals in LIMTCP Consumption-Poor Households in Tanzania and Ghana,* 2012. Working Paper No. 871. Annandale-on-Hudson, New York: Levy Economics Institute of Bard College.

______ (2013). *Quality of Statistical Match and Simulations Used in the Estimations of the Levy Institute Measure of Time and Consumption Poverty (LIMTCP) for Turkey in 2006.* Working Paper No. 769. Annandale-on-Hudson, New York: Levy Economics Institute of Bard College.

______ (2012). *Simulations of Full-Time Employment and Household Work in the Levy Institute Measure of Time and Income Poverty (LIMTIP) for Argentina, Chile and Mexico.* Working Paper No. 727. Annandale-on-Hudson, New York: Levy Economics Institute of Bard College.

Onaran, O. and C. Oyvat (2023). *The Employment Effects of Public Spending in Infrastructure, the Care Economy and Green Economy: The Case of Emerging Economies.* Geneva: International Trade Unions Confederation.

Onaran, O., C. Oyvat and E. Fotopoulou (2022). "A Macroeconomic Analysis of the Effects of Gender Inequality, Wages and Public Social Infrastructure: The Case of the UK." *Feminist Economics* 28(2): 152–188.

Onaran, O., C. Oyvat and E. Fotopoulou (2019). "Gendering Macroeconomic Analysis and Development Policy: A Theoretical Model for Gender Equitable Development." CWE-GAM Working Paper Series 19-04, Program on Gender Analysis in Economics (PGAE), American University, Washington, D.C.

Oyvat, C. and O. Onaran (2022). "The Effects of Public Social Infrastructure and Gender Equality on Growth and Employment: The Case of S. Korea." *World Development* 158: 105987.

Ragbi, Z., T. Bouba, L. Abbad, L. Rhoufrani and M.O. Noussairi (2023). *Promoting decent employment for women through investments in the care economy: What about the potential of preschool?* Rabat: Ministry of Economy and Finance, Directorate of Studies and Financial Forecasting, and UN Women.

Scheil-Adlung, X. (2015). *Long-term care protection for older persons: A review of coverage deficits in 46 countries.* Extension of Social Security ESS Working paper No:50. Geneva: International Labour Organization.

Stiglitz, J.E. (2016). "Inequality and Economic Growth." *The Political Quarterly* 86: 134–155.

UK Women's Budget Group (2022). *A Green and Caring Economy.*

UK Women's Budget Group (2015). *Feminist F Plan: A Feminist Economic Strategy for a Caring and Sustainable Economy.*

United Nations Conference on Trade and Development (2017). *Trade And Development Report 2017: Beyond Austerity: Towards A Global New Deal.* New York and Geneva: United Nations.

UNESCO (2015). *Education for All 2000-2015: Achievements and Challenges.* Paris: UNESCO.

UN (2024). *Transforming Care Systems: In the Context of the Sustainable Development Goals and Our Common Agenda.* New York: United Nations.

UN (2021). *Our Common Agenda – Report of the Secretary-General.* New York: United Nations.

UN Women (2019a). *Investing in Free Universal Childcare in S. Africa, Turkey and Uruguay.* UN Women Discussion Paper (by J. De Henau, D. Buedlander, F. Filguiera, I. Ilkkaracan, K. Kim and R. Montero). New York: UN Women.

______ (2019b). *Investing in Early Childhood Education and Care in Kyrgyz Republic: An Assessment of Care Deficits, Costs and Impact on Employment, Gender Equality and Fiscal Returns.* UN Women Discussion Paper (by I. Ilkkaracan and K. Kim). New York: UN Women.

______ (2019c). *Investing in Free Universal Childcare in the Republic of North Macedonia: Analysis of Costs, Short-term Employment Effects and Fiscal Revenue.* UN Women Discussion Paper (by J. De Henau and N. Mojsoska-Blazevski). New York: UN Women.

UN Women and ILO (2021). *A guide to public investments in the care economy: Policy support tool for estimating care deficits, investment costs, and economic returns* (by I. Ilkkaracan). New York: UN Women, and Geneva: ILO.

______ (2024). *Consolidated report: A guide to public investments in the care economy. Estimating care deficits, investment costs, and economic returns* (by I. Ilkkaracan). New York: UN Women, and Geneva: ILO.

UN Women Jordan (2020). *Implications of the Covid-19 Pandemic for Women's Economic Empowerment and Policy Implications: Contextualizing to the Case of Jordan.* Amman: UN Women Jordan Country Office.

Wils, A. (2015). *Reaching education targets in low and lower middle income countries: Costs and finance gaps to 2030 for pre-primary, primary, lower- and upper secondary schooling.* UNESCO Education for All (2015) Background Paper.

World Health Organization (WHO) (2016). *Health Workforce Requirements for Universal Health Coverage and The Sustainable Development Goals.* Geneva: World Health Organization.

______ (2021). *Ending Preventable Maternal Mortality: A renewed focus for improving maternal and newborn health and wellbeing.* Geneva: World Health Organization.

Zacharias, A., T. Masterson and K. Kim (2014). *The Measurement of Time and Income Poverty in Korea.* Research Project Report. Annandale-on-Hudson, New York: Levy Economics Institute of Bard College.

Zacharias, A., T. Masterson, F. Rios-Avila, K. Kim. and T. Khitarishvili (2018). *The Measurement of Time and Income Poverty in Ghana and Tanzania.* Annandale-on-Hudson, New York: Levy Economics Institute of Bard College.

Zacharias, A., T. Masterson, F. Rios-Avila, M. Nikiforos, K. Kim and T. Khitarshvili (2019). *Macroeconomic and Microeconomic Impacts of Improving Physical and Social Infrastructure: A Macro-Micro Policy Model for Ghana and Tanzania.* Research Project Report. Annandale-on-Hudson, New York: Levy Economics Institute of Bard College.

ENDNOTES

1. Source: Ragbi et al. 2023
2. See, for example, Stiglitz 2016; UNCTAD 2017; and ILO 2018.
3. See ILO 2018; UNCTAD 2017; UN Women 2018; UNSG 2021.
4. In terms of impact on care providers, inevitably the gender distribution of unpaid care work and its implications for women's employment and earnings is a cross-cutting aspect of the problem statement and justification. In terms of impact on care receivers, limitations of access to quality care result in negative outcomes for the well-being of care-dependent groups such as children, older persons, persons with disabilities and individuals who are ill, with long-term implications for human capabilities, social inclusion, productivity and the overall functioning of the economy.
5. See the Argentinian province-level study as an example: Méndez Santolaria and Rodriguez Enriquez 2023a and 2023b.
6. See UN Women and ILO 2021.
7. See UN Women and ILO 2024 for detailed findings in each country.
8. Public investment is state or government expenditure on assets, infrastructure and systems that generate long-term economic and social returns, rather than immediate consumption. In the conventional public budgeting framework, this is primarily limited to physical infrastructure, including the building of schools or hospitals, while annual expenditures on education and healthcare services are categorized as consumption expenditures. From a gender and care perspective, however, feminist economists argue that spending on care services should be seen as public investment in social infrastructure, with expected economic and social returns over both the short and long run, in terms of expanding human capabilities and human development as well as employment creation and productivity.
9. See: https://webapps.ilo.org/globalcare/simulator/1?language=en
10. See: https://www.ecdan.org/Cost-of-Inaction-Tool/#/
11. See, for example, UN Women 2025.
12. Sources: Elson 2013; Ilkkaracan 2013; Kim and Ilkkaracan 2019; de Henau et al. 2016 and 2017; UK Women's Budget Group Feminist F Plan 2015; ILO 2020.
13. See Section 4.3 for an overview of the required skills and qualifications to undertake this analysis.
14. A detailed discussion of the data requirements and methodologies for estimation of different economic returns is provided in Part B (Section 9). For an example of application at the sub-national level, see the reports from the pilot implementation of the tool in Argentina: Méndez Santolaria and Rodriguez Enriquez, 2023a and 2023b.
15. See Section 10 on these possible extensions.
16. Minimum skills/qualifications for the lead economist researcher are: an MA and preferably a PhD in economics; demonstrated expertise in data collection/compilation, analysis and writing research reports; knowledge of, and demonstrated background in, research and publication in gender and economics, especially in gender and the care economy and public finance; experience conducting input-output analysis for estimation of indirect employment creation, microsimulation modelling for estimation of earnings and their distribution and the impact on poverty, and macro modelling for estimation of impact on GDP and other macro indicators.
17. This role may also be covered by the project coordinator, depending on their skills and experience.
18. If there is any excess capacity in services, the reasons for this should be explored: e.g. affordability of services, geographical distribution and proximity to service centres, etc.
19. 'Disadvantaged' status should be determined by the relevant country context, e.g. disadvantaged in reference to the national poverty line, or in terms of belonging to marginalized groups or other relevant criteria.
20. Note that the ILO's Care Policy Investment Simulator includes both variable and fixed costs.
21. To give an example, the expenditures on ECCE services are usually available from the ministry of education, which presents the ministry annual budget disaggregated by the level of education. These are public expenditures which would need to be divided by the number of children enrolled in public ECCE centres to find the per-child cost. Input-output analysis is explained in Section 9.1.2.
22. See, for example, Ilkkaracan, Kim and Kaya 2015 for Türkiye; and Zacharias et al. 2019 for Ghana and Tanzania.
23. In ILO (2018), the costs per care receiver were adjusted to reflect decent wages for care workers in line with the policy target of SDG 8 on decent employment (see Ilkkaracan and Kim 2019 p.16–17 for a detailed discussion). For adjusting the care coverage gap costing in education, for example, teacher salaries were compared to average salaries of tertiary educated workers and, where lower, they were revised upward. Total wage expenditures for teachers were calculated using the revised salary.

24. This approach is based on the assessment by Valeria Esquivel, Employment Policies and Gender Specialist at ILO Geneva, used to conduct the 45-country study on estimation of care coverage gaps, costs and employment generation outcomes (see ILO 2018, ch.5; and Ilkkaracan and Kim 2019).

25. Ilkkaracan and Kim (2019) argue that given this complementarity between home-based and centre-based care: "*the best-performing countries cannot be simply identified on the basis of highest enrolment rates in childcare centres. Rather for this young age group, coverage should be defined as a combination of access to formal childcare institutions as well as parental care subsidized through care leave insurance (for both wage and salary workers and for self-employed workers) or care allowance.*" (Ilkkaracan and Kim, 2019, p.10–11).

26. It is possible to derive the target enrolment rate on the basis of the best-performing countries in the region. This was one of the approaches adopted in the study on the Kyrgyz Republic (Ilkkaracan and Kim 2019; and UN Women 2019b).

27. For a detailed discussion of this type of survey, see Ilkkaracan, Kim and Kaya 2015.

28. Additional support needs could include: uniforms, tuition support, first-language instruction, construction of remote or mobile schools for hard-to-reach children, support for children with disabilities, access to internet. An assessment by Wils (2015) for low- and lower-middle-income countries defines children in need of additional support as those living under US$2 per day. It finds that the additional expenses to cover this support corresponds to 20 per cent of the cost per child for pre-primary and primary education, 30 per cent for lower-secondary education and 40 per cent for upper-secondary education (Wils 2015, p.3).

29. See, for example, WHO 2016 and Dublin Declaration 2017. The UN Secretary General's High-Level Commission on Health Employment and Economic Growth (2016) calls for increased and transformed investments in the health and social workforce, highlighting the benefits across multiple SDGs, including SDG 1: poverty elimination, SDG 3: good health and well-being; SDG 4: quality education; SDG 5: gender equality; and SDG 8: decent work and economic growth.

30. The 12 key population health indicators identified by WHO and the World Bank are: family planning, antenatal care coverage, skilled birth attendance, DTP3 (diphtheria-tetanus-pertussis immunization), tobacco smoking, potable water, sanitation, antiretroviral therapy, tuberculosis treatment, cataract surgery, diabetes treatment, and hypertension treatment.

31. These are categorized in seven groups: dentistry personnel, pharmaceutical personnel, laboratory health workers, environment and public health workers, community and traditional health workers, health management and support health workers, and other health workers, which include medical assistants, dieticians, nutritionists, occupational therapists, medical imaging and therapeutic equipment technicians, optometrists, ophthalmic opticians, physiotherapists, personal care workers, speech pathologists and medical trainees (WHO 2016, p.9).

32. 4.45 per 1,000 is the SDG index threshold, as outlined above; other appropriate ratios of DMN per 1,000 population can be also adopted as policy targets. See, for example, Gültekin, Ilkkaracan, Bayar and Ozcanlı 2025 for a pilot application of the first edition of this policy tool to data for Türkiye. Here a higher ratio of DMN per 1,000 population is used, in line with OECD averages.

33. WHO Global Health Expenditure Database: https://apps.who.int/nha/database/Select/Indicators/en

34. Ilkkaracan and Kim 2019 (p.28), in their costing of the healthcare coverage gap in 45 high- and upper-middle-income countries, found that the average pay for health workers was already on a par with the average wage levels of higher-educated workers, and thus used existing wage levels as the target levels.

35. Dependency data is available for EU and most OECD countries, which conduct a periodic Survey on Income and Living Conditions (SILC).

36. This policy target of approximately 12 per cent LTC coverage rate is associated with a universal right/access to LTC services by anyone with LTC needs in the 65+ population. It is derived on the basis of LTC coverage rates of countries where access to LTC is secured as a legal right. Assuming similar shares of 65+ population with LTC needs across different countries, it is predicted that universal coverage adjusts endogenously to around 12 per cent if the 65+ population is relatively small.

37. It is debatable whether to include those who receive disability cash benefits in the number of those 'already covered' by LTC services. The approach adopted by this policy tool defines care coverage by access to formal services. Accordingly, receivers of cash benefits can be considered as a potential target for inclusion among those who are covered.

38. European Commission 2012, Active Ageing, Special Eurobarometer, No.378: https://europa.eu/eurobarometer/surveys/browse/all/series/300540; Scheil-Adlung 2015, p.21–22.

39. For example, Ilkkaracan and Kim (2019) use the wage gap between LTC workers and nurses as their reference, and adjust LTC workers' wages upwards by reducing the gap by half.

40. See Ilkkaracan et al. 2021 for a policy simulation on investing in childcare services expansion and assessment of returns in terms of income and time poverty by gender.
41. IO data can be obtained from national accounts department of national statistics institutes. See also OECD Input-Output tables: https://www.oecd.org/en/data/datasets/input-output-tables.html; for OECD countries and the World Input-Output Database (WIOD): https://www.rug.nl/ggdc/valuechain/wiod/?lang=en covering 43 countries (with updated IO tables) as additional sources. See Ilkkaracan, Kim and Kaya 2015 p.37 and Appendix III; and de Henau et al 2017 p. 22 and Appendix I for a discussion on the application of IO analysis to policy simulations on investing in care services.
42. See Ilkkaracan, Kim and Kaya 2015 for a discussion.
43. See Antonopoulos et. al. 2011; Ilkkaracan, Kim and Kaya 2015, p.37–39, p.68 and Appendix II; and also Kim 2011.
44. For a detailed discussion on estimation of tax revenues resulting from job creation in care services sectors, see de Henau et al. 2019, p.15–16 and Appendix II; Ilkkaracan, Kim and Kaya 2015, p.56–58; and UN Women LAC 2022, p.65.
45. Also see Masterson 2018, 2013 and 2012 for applications to Ghana and Tanzania, Türkiye and Latin America; and Kum and Masterson 2010 for a detailed discussion.
46. See Ilkkaracan, Kim and Kaya 2015 p.44–49 for an example of job distribution outcomes by different worker and job attributes.
47. See Kim, Ilkkaracan and Kaya 2019.
48. See also de Henau et al. 2017, p.30, for an applied example of estimating GDP growth using IO analysis.
49. WBG analysis of ONS Emissions Inventory and Business Register and Employment Survey, 2019.
50. Source: OECD Data Explorer Greenhouse Gas Footprints (GHGFP): Principal Indicators
51. Grown, de Henau and Ilkkaracan 2026.
52. See p.29: "Investment in sectors with the greatest potential for creating more and better jobs, such as the green, care and digital economies, is key and can be brought about through major public investment, along with incentive structures for long-term business investments consistent with human development and well-being"; and p.30: "(c) facilitating women's economic inclusion, including through large-scale investment in the care economy and equal pay, and more support for women entrepreneurs".
53. The countries are those which have available data for analysis of the employment generation impact of investing in care service expansion. These are predominantly high- and middle-income countries, including most countries in the OECD, and account for 85 per cent of global GDP and close to 60 per cent of global population (workforce) (see background paper for ILO 2018: Ilkkaracan and Kim 2019, p.5).

UN WOMEN EXISTS TO ADVANCE WOMEN'S RIGHTS, GENDER EQUALITY AND THE EMPOWERMENT OF ALL WOMEN AND GIRLS.

UN Women exists to advance women's rights, gender equality and the empowerment of all women and girls.

As the lead United Nations entity on gender equality and secretariat of the UN Commission on the Status of Women, we shift laws, institutions, social norms and services to close the gender gap and build an equal world for all women and girls. Our partnerships with governments, women's movements and the private sector, coupled with our coordination of the broader United Nations, deliver lasting changes. We make strides in four areas: leadership, economic empowerment, freedom from violence, and peace, security and humanitarian action.

UN Women keeps the rights of women and girls at the centre of global progress – always, everywhere. Because gender equality is not just what we do. It is who we are.

220 East 42nd Street
New York, New York 10017, USA
unwomen.org
facebook.com/unwomen
x.com/un_women
youtube.com/unwomen
flickr.com/unwomen