Annex 3

A hypothetical example of calculating SDG indicator 3.b.3 with the adapted indicator for children

Priority diseases were selected based on global burden of disease. Below, a hypothetical overview of global disease burden (in thousand Disability-Adjusted Life-Years) is shown for young children (infants, toddlers and pre-school children) and young children. Values shown are already summed up for males and females within the same age group. For simplification, only three disease (in bold) are selected per age group.

	Young children	Young children
Disease I	3,000	**10,500**
Disease II	**22,500**	**7,000**
Disease III	7,000	2,000
Disease IV	3,500	6,000
Disease V	**12,000**	**8,000**
Disease VI	**9,000**	5,500

Diseases selected are then linked to essential medicines. Associated medicines should be first-choice medicines used in primary health care, based on international treatment guidelines. For some diseases, multiple medicines or interchangeable medicines from the same therapeutic class may be included in the core set. Below a hypothetical core set of medicines for young children.

	Associated medicines	Treatment duration	Number of units
Disease II	Medicine A	30	60
Disease V	Medicine B	14	14
	Medicine C	7	21
Disease VI	Medicine D	30	30
	Medicine E or Medicine F	3	6

For each medicine in the core set, the number of units needed for treatment is determined, based on the average maintenance dose in its main indication and the duration of treatment.

Availability of medicines in the core set for young children in country X is as follows:

	Facility 1	Facility 2	Facility 3
Medicine A	1	1	0
Medicine B	0	0	0
Medicine C	1	1	1
Medicine D	1	0	1
Medicine E	1	0	1

In which 1 = available and 0 = not available.

Note that Medicine F is not surveyed in country X, because it is considered interchangeable with Medicine E.

Only for medicines that were available on the day of data collection, price data is collected. The following (price) data is collected in country X. Prices are in local currency of country X.

	Facility 1	Facility 2	Facility 3
Medicine A	320	460	-
Medicine B	-	-	-
Medicine C	1200	1600	1750
Medicine D	600	-	750
Medicine E	170	-	250

Medicine A was found in facility 1 for a price of 320 (in local currency). The number of units needed for a treatment course is 60 (2 units per day, continuous treatment).

The price of a daily dose is then calculated as:

$$price\ per\ treatment = \frac{unit\ price * units\ per\ treatment}{365/12} = \frac{320 * 60}{365/12} = 631$$

In country X, the national poverty line (NPL) is 1300 and the daily wage of the lowest-paid unskilled government worker (LPGW) is 2100 (both in local currency). Extra daily wages (EDW) of medicine A in facility 1 can then be calculated as:

$$EDW = \frac{NPL + price\ per\ treatment}{daily\ wage\ of\ LPGW} = \frac{1300 + 631}{2100} = 0.9$$

With EDW <1, medicine A in facility 1 is considered affordable.

Medicine C was found in facility 3 for a price of 1750. The number of units needed for a treatment course is 21 (3 units per day, 7 days of treatment).

$$price\ per\ treatment = \frac{1750 * 21}{365/12} = 1208 \quad \text{and} \quad EDW = \frac{1300 + 1208}{2100} = 1.2$$

With EDW >1, medicine C in facility 3 is considered unaffordable.

Repeated for all medicines with price data, affordability for young children is as follows:

	Facility 1	Facility 2	Facility 3
Medicine A	1	0	-
Medicine B	-	-	-
Medicine C	1	0	0
Medicine D	1	-	1
Medicine E	1	-	1

In which 1 = affordable and 0 = not affordable. Affordability cannot be computed for medicines without price data.

The weight to be applied to each medicine in the core set is calculated as the proportion of the medicine's specific regional DALYs compared to the total sum of DALYs in the basket. The regional burden may differ from the global burden of disease (see figure 1).

In this scenario, the total sum of DALYs in the basket is 36,000 DALYs (in thousands). The weight applied to medicine A can be calculated as:

$$Weight = \frac{Medicine\ A\ DALYs}{Total\ sum\ of\ DALYs} = \frac{9{,}000}{36{,}000} = 0.25$$

Repeated for all medicines, the following weights will be applied:

	Disease	Disease burden	Weight
Medicine A	Disease I	9,000	0.25
Medicine B	Disease II	6,000	0.17
Medicine C	Disease II	6,000	0.17
Medicine D	Disease V	7,500	0.21
Medicine E	Disease V	7,500	0.21

Note that equal weights are assigned to medicines that are used to treat the same disease.

Combining two dimensions of access to medicines (see figure 2 and 3), only medicines that are both available and affordable are considered accessible. In country X, access for young children is as follows:

	Facility 1		Facility 2		Facility 3	
	Av/aff	**Access**	Av/aff	**Access**	Av/aff	**Access**
Medicine A	1 / 1 →	**1**	1 / 0 →	**0**	0 / - →	**0**
Medicine B	0 / - →	**0**	0 / - →	**0**	0 / - →	**0**
Medicine C	1 / 1 →	**1**	1 / 0 →	**0**	1 / 0 →	**0**
Medicine D	1 / 1 →	**1**	0 / - →	**0**	1 / 1 →	**1**
Medicine E	1 / 1 →	**1**	0 / - →	**0**	1 / 1 →	**1**

In which 1 = available/affordable/accessible, 0 = not available/affordable/accessible and - = no price data. Av/aff = availability/affordability.

Applying the weights to the medicines (accessibility*weight) in facility 1 gives:

	Accessibility	Weight	Weighted accessibility
Medicine A	1	0.25	0.25
Medicine B	0	0.17	0
Medicine C	1	0.17	0.17
Medicine D	1	0.21	0.21
Medicine E	1	0.21	0.21
		Access (%) =	**83%**

Applying this to all facilities, facility 2 has a weighted access of 0% and facility 3 of 42%. These numbers are then transformed to a binary format, marking facilities that have a weighted access of ≥80% as facilities with accessible medicines. In this scenario, only facility 1 has a weighted access of ≥80% and is considered to have accessible medicines.

SDG indicator 3.b.3 for country X is then computed as:

$$SDG_{3.b.3.} = \frac{Facilities\ with\ accessible\ basket\ of\ medicines}{Surveyed\ Facilities} * 100\% = \frac{1}{3} * 100\% = 33\%$$