ALLOCATION FORMULA CALCULATION APPROACH

- INTERNATIONAL PLANNED PARENTHOOD FEDERATION -

The following document illustrates the operations of the Stream 1 allocation formula built based on the resolution of the 2019 General Assembly (GA) in New Delhi.

The memo has four sections, corresponding to the formula's four main components. It covers: (1) calculating Country Need Points for each country, (2) calculating Performance Points for each country, (3) combining Country Need Points and Performance Points to determine a total allocation, and (4) a set of final formula adjustments. The appendices contain a condensed version of all of the formulas, an illustrative example of the calculations using sample data, and a listing of all of the need metrics used.

1. Country Need Points

The formula starts by calculating the Country Need Points for each country.

- First, the formula normalizes each needs metric (e.g., maternal mortality rate, HIV incidence; see Appendix C for full list). The normalization takes each metric's raw values and converts them into a scale from 0 to 1 to enable comparisons across countries and metrics. For each metric, the country with the lowest need indicator gets a 0, and the country with the highest indicator gets a 1, with the remaining countries distributed between them according to their relative needs (see example in Figure 1).

  The normalization calculation for any Need Metric from **country x** is as follows:

$$Normalized\ Metric_{country\ x} = \frac{Metric_{country\ x} - \min(Metric)}{\max(Metric) - \min(Metric)}$$

Figure 1
Normalization – illustrative example

Country	Adolescent Birth Rate	Normalization	Normalized value
A	5	$norm(Country\ A) = \frac{5-5}{30-5} = 0$	**0**
B	7	$norm(Country\ B) = \frac{7-5}{30-5} = 0.08$	**0.08**
C	18	$norm(Country\ C) = \frac{18-5}{30-5} = 0.52$	**0.52**
D	30	$norm(Country\ D) = \frac{30-5}{30-5} = 1$	**1**

In the above, min(Metrics) indicates the smallest value for the metric, and max(Metric) indicates the largest value for the metric.

- The need metrics for each country are then combined. They are given different weights (shown in Appendix C) and summed to get a Combined Needs Metric. Countries that do not have certain metrics available are not penalized for that; rather, the other metrics get more weight to account for the missing data.

  Thus, the equation to calculate the Combined Needs Metric (CNM) for **country x** is as follows (the percentages represent the weights from Appendix C):

$$CNM_{country\ x} = norm(Unmet\ Need) * 20\% + norm(Maternal\ Mortality) * 20\% + \cdots + \cdots + norm(SIGI\ Discrimination\ in\ Family) * 2.5\%$$

- This Combined Need Metric is then multiplied by the Country Income Factor (CIF). All low-income countries get a Factor of 100%. For middle income countries, the Factor is a sliding multiplier between 100% and 70% (borrowing from the Global Fund's approach). Specifically, within the middle income countries, those with the highest GNI per capita and lowest levels of income inequality (GINI) get a multiplier of 70%, and those with the lowest GNI per capita and highest levels of income inequality get a multiplier of 100%. The product of these two factors gives the Adjusted Need Metric (ANM).

  Thus, the equation to calculate the Adjusted Need Metric ANM for **country x** is as follows:

$$Adjusted\ Need\ Metric_{country\ x} = CNM_{country\ x} * CIF_{country\ x}$$

- This Adjusted Need Metric (ANM) is then multiplied by the square root of the population to compute the Country Need Points (using the square root of population spreads funding more evenly to small countries, and avoids funding getting overly concentrated in the handful of most populous countries; this builds on practices of the World Health Organization and other international groups). For **country x** the Country Need Points equals:

$$Country\ Need\ Points_{country\ x} = AMN_{country\ x} * \sqrt{population_{country\ x}}$$

  In section 3, we will return to this Country Need Points to set the final allocation.

2. Performance Points

The Performance Points give MAs the opportunity to earn points across the three Outcome areas where IPPF works. Within each Outcome area, MAs can earn points both for absolute size of impact and for growth year over year. The bullets below walk through how points are calculated for each Outcome area, and then how the points from the three Outcome areas are summed to get the total Performance Points for each MA.

Each Outcome area has a specific Expected Result that it is based on (see Figure 2). These can be updated as IPPF's Expected Results and strategic priorities shift over the years.

Figure 2

Performance metrics used

- **Outcome 1:** ER 1 - Successful policy initiatives and/or legislative changes *(absolute number only, since year over year growth is not appropriate for this metric)*
- **Outcome 2:** ER 4 - Young people completed CSE programme (Note: the specific metric for ER4 will likely change based on the results of the midterm review)
- **Outcome 3:** ER 8 - Number of couple years of protection

- Within each Outcome, each MA gets an Absolute Impact score. This is the normalized value of its Expected Result for that area, compared to all other Expected Results for that Outcome (e.g., the MA with the most CSE participants gets a 1, and the one with the fewest gets a 0). The normalization works the same as it does for Country Need Points.
- Each MA also gets a Growth score within each Outcome. First, the formula calculates the year over year growth in Expected Results for that MA (see below). Then, the growth rates for all MAs within that Outcome are normalized (e.g., the MA with the highest growth rate gets a 1).

$$Growth\ score = \frac{Recent\ Expected\ Result\ - Prior\ Expected\ Result}{Prior\ Expected\ Result}$$

- The Absolute Impact score and Growth score for each Outcome area are combined for each MA, to give the Outcome Points. Growth is weighted at 70% to reward all MAs for progress and avoid disadvantaging smaller MAs, and Absolute Impact is weighted at 30%. As an example, the Outcome Points for an MA for Outcome 2 would be:

$$\begin{aligned} &Outcome\ 2\ Points \\ &\quad = norm(Outcome\ 2\ Absolute\ Impact) * 30\% \\ &\quad + norm(Outcome\ 2\ Growth) * 70\% \end{aligned}$$

  Outcome 1 only includes an Absolute Impact score, weighted at 100%, since policy/legislative changes are typically small in number and do not experience year over year growth.

- Each MA's three Outcome Points are combined, and are weighted based on what percentage of the MA budget is spent on each Outcome (e.g., an MA that spends 80% of its funds on Outcome 3 would have its Outcome 3 score count for 80% of its performance score). Thus, the weighting for **Outcome x** would be:

$$Weight_{Outcome\ A} = \frac{\$\ spent\ on\ Outcome\ A}{Total\ \$\ spent\ on\ all\ three\ Outcomes}$$

  Thus the final Performance Points for each MA are calculated as follows:

$$\begin{aligned} &Performance\ Points_{country\ x} \\ &\quad = \text{Outcome 1 Points} * \text{Outcome 1 Weight} + \text{Outcome 2 Points} \\ &\quad * \text{Outcome 2 Weight} + \text{Outcome 3 Points} * \text{Outcome 3 Weight} \end{aligned}$$

3. Combining Country Need and Performance Points to set an allocation

Country Need Points and Performance Points are then used to set a total allocation for the MA. 90% of the total funding for Stream 1 is set aside for needs based allocations; as a result, this pot of funding (90% of the total) is used to calculated each MA's need-based funding using Country Need Points. The other 10% of the total is used to calculate performance funding using Performance Points.

- The pot of needs-based funding is distributed in proportion to each country's need points (which represent its level of need). Thus, a country whose need points make up 1% of the total sum of need points would get 1% of the total funding. The needs-based allocation is calculated as follows:

$$Need\ Allocation_{country\ x} = \frac{Country\ Need\ Points_{country\ x}}{Sum\ of\ all\ Country\ Need\ Points} * (Total\ Stream\ 1\ Funds * 90\%)$$

- The performance funding is also distributed to each country based on its proportion of Performance Points. It is calculated as follows:

$$Performance\ Allocation_{country\ x} = \frac{Performance\ Points_{country\ x}}{Sum\ of\ all\ Performance\ Points} * (Total\ Stream\ 1\ Funds * 10\%)$$

- Finally, the Need Allocation and Performance Allocation are summed to give the total MA Allocation:

$$Allocation_{country\ x} = Need\ Allocation_{country\ x} + Performance\ Allocation_{country\ x}$$

- Each MA's Performance Allocation is capped at 25% of its Need Allocation, to ensure that country need remains the dominant factor determining allocations, as per the GA resolution.

4. Additional Formula Adjustments

The formula has three types of additional adjustments it makes, to make sure allocations are fair for MA of different sizes and capacities.

- First, any low- or middle-income country that would receive less than $75,000 in its Need Allocation is bumped up to receive $75,000 in Need Allocation (Performance Allocations are added on top of this number). This is to help ensure the smallest countries, which often face unique challenges related to their scale and remoteness, do not get left behind.

- Second, adjustments are made based on MA fundraising data to ensure that no MAs (especially those that are not donor darlings) get left behind. The formula calculates a Fundraising Ratio for each MA, which looks at how much money the MA brings in (from all non-core sources) relative to the amount the formula would allocate to it based on its need (for context, as of today the average MA brings in roughly 3.5x the amount of its core grant through all other income sources).

$$Fundraising\ Ratio = \frac{All\ noncore\ income}{MA\ Allocation}$$

The formula then gives a modest increase to MAs who are below the average Fundraising Ratio to ensure they are not left behind. The adjustment is designed to be modest (the average increase given is ~$15,000). The adjustment is also designed to ensure that for every dollar an MA raises, it always comes out ahead – as a way to always encourage more active fundraising.

- Third, any changes to MA Need Allocations are phased in over a four-year period as the new formula is implemented, from 2022 to 2025. Changes are phased in linearly over the four years (e.g., a consistent change between each year). This is intended to give MAs significant time to plan for their adjusted allocation levels and addresses a clear desire from MAs for funding shifts to be introduced gradually. The Performance Allocations are not affected by this phasing.

$$Annual\ Change\ in\ Need\ Allocation\ = \frac{New\ Need\ Allocation - Old\ Need\ Allocation}{4}$$

The formula takes each country's New Need Allocation and adds on the Annual Change value every year through 2025. For example, an MA with an Old Need Allocation of $300,000 and a New Need Allocation of $380,000 would receive an additional $20,000 each year, starting with $320,000 in 2022, and going up to $380,000 by 2025.

Appendix A: Formula equations

The following combines all of the equations for the formula together for easy reference, organized according to the sections above.

Normalization process: (identical for need metrics and absolute impact and growth for each Outcome in the performance calculations):

$$Normalized\ Metric_{country\ x} = \frac{Metric_{country\ x} - \min(Metric)}{\max(Metric) - \min(Metric)}$$

The normalized value is noted as (norm)Metric; min(Metrics) indicates the smallest value for the metric, and max(Metric) indicates the largest value for the metric.

1. Country Need Points

$$Combined\ Needs\ Metric\ (CNM)_{country\ x} = norm(Unmet\ Need) * 20\% + norm(Maternal\ Mortality) * 20\% + \cdots + \cdots + norm(SIGI\ Discrimination\ in\ Family) * 2.5\%$$

$$Adjusted\ Need\ Metric\ (ANM)_{country\ x} = CNM_{country\ x} * Country\ Income\ Factor_{country\ x}$$

$$Country\ Need\ Points_{country\ x} = ANM_{country\ x} * \sqrt{population_{country\ x}}$$

2. Performance Points

$$Growth\ Score_{Outcome\ A} = \frac{Recent\ Expected\ Result - Prior\ Expected\ Result}{Prior\ Expected\ Result}$$

$$Outcome\ 1\ Points = norm(Outcome\ 1\ Value) * 100\%$$

$$Outcome\ 2\ Points = norm(Outcome\ 2\ Absolute\ Impact) * 30\% + norm(Outcome\ 2\ Growth) * 70\%$$

$$Outcome\ 3\ Points = norm(Outcome\ 3\ Absolute\ Impact) * 30\% + norm(Outcome\ 3\ Growth) * 70\%$$

$$Weight_{Outcome\ A} = \frac{\$\ spent\ on\ Outcome\ A}{Total\ \$\ spent\ on\ all\ three\ Outcomes}$$

$$Performance\ Points_{country\ x} = \text{Outcome 1 Points} * \text{Outcome 1 Weight} + \text{Outcome 2 Points} * \text{Outcome 2 Weight} + \text{Outcome 3 Points} * \text{Outcome 3 Weight}$$

3. MA Allocation

$$Need\ Allocation_{country\ x} = \frac{Country\ Need\ Points_{country\ x}}{Sum\ of\ all\ Country\ Need\ Points} * (Total\ Stream\ 1\ Funds * 90\%)$$

$$Performance\ Allocation_{country\ x} = \frac{Performance\ Points_{country\ x}}{Sum\ of\ all\ Performance\ Points} * (Total\ Stream\ 1\ Funds * 10\%)$$

$$MA\ Allocation_{country\ x} = Need\ Allocation_{country\ x} + Performance\ Allocation_{country\ x}$$

Appendix B: Full formula example

The following walks through the calculations for a sample country using illustrative data. It is organized according to the sections above.

1. Country Need Points:

Country A has the following normalized Need Metrics for a given year (SIGI scores averaged for simplicity):

Unmet Need (20%)	Maternal Mortality Rate (20%)	Adolescent Birth Rate (20%)	HIV Incidence Rate (5%)	HIV Treatment (5%)	Cervical Cancer Rate (10%)	Gender Inequality Index (10%)	Average SIGI Score (10%)
0.25	**0.12**	**0.05**	**0.01**	**0.38**	**0.31**	**0.54**	**0.25**

The Combined Need Metric for Country A is calculated as:

$$CMN_{country\ A} = 0.25 * 20\% + 0.12 * \ 20\% + 0.05 * 20\% + 0.01 * 5\% + 0.38 * 5\% + 0.31 * 10\% + 0.54 * 10\% + 0.25 * 10\% = \mathbf{0.21}$$

Country A is a low-income country, so it gets a Country Income Factor (CIF) of 100%.

The Adjusted Need Metric for Country A is calculated as:

$$AMN_{country\ A} = 0.21 * 100\% = \mathbf{0.21}$$

Assume Country A has a population of 1,500,000; the formula calculates points using each country's population number in thousands (e.g., Country A would have a value of 1,500).

The Country Need Points is then calculated:

$$Country\ Need\ Points_{country\ A} = 0.21 * \sqrt{1{,}500} = \mathbf{8.1}$$

2. Performance Points:

Country A has the following normalized Outcome values for a given year:

Outcome 1 Absolute Impact (normalized)	Outcome 2 Absolute Impact (normalized)	Outcome 2 Growth (normalized)	Outcome 3 Absolute Impact (normalized)	Outcome 3 Growth (normalized)
0.89	**0.5**	**0.25**	**0.14**	**0.33**

Country A spends $100,000 on Outcome 1, $500,000 on Outcome 2, and $400,000 on Outcome 3.

First, calculate the Outcome Points:

$$Outcome\ 1\ Points = 0.89 * 100\% = 0.89$$

$$Outcome\ 2\ Points = 0.25 * 70\% + 0.5 * 30\% = 0.325$$

$$Outcome\ 3\ Points = 0.33 * 70\% + 0.14 * 30\% = 0.273$$

Then, we calculate the Outcome Weights based on MA spending:

$$Outcome\ 1\ Weight = \frac{100{,}000}{1{,}000{,}000} = 0.1, or\ 10\%$$

$$Outcome\ 2\ Weight = \frac{500{,}000}{1{,}000{,}000} = 0.5, or\ 50\%$$

$$Outcome\ 3\ Weight = \frac{400{,}000}{1{,}000{,}000} = 0.4, or\ 40\%$$

Summing the Outcome Points weighed by the Outcome Weights gives us our Performance Points:

$$Performance\ Points_{Country\ A} = 0.89 * 10\% + 0.325 * 50\% + 0.273 * 40\% = \mathbf{0.36}$$

3. Summing Country Need Points and Performance Points

Assume that across all MAs, the sum of Country Need Points is 500, and the sum of all Performance Points is 250. Assume that there is a total of $30M to be spent in Stream 1.

Then, the Need Allocation for Country A is calculated as the following:

$$Need\ Allocation_{country\ A} = \frac{8.1}{500} * 30{,}000{,}000 * 90\% = \$439{,}200$$

Assume that the sum of all Performance Points equals 250

Then, the Performance Allocation for Country A is calculated as the following:

$$Performance\ Allocation_{country\ A} = \frac{0.36}{250} * 30{,}000{,}000 * 10\% = \$4{,}320$$

Finally, the total MA Allocation can be calculated by summing the two allocations:

$$MA\ Allocation_{country\ A} = \$439{,}200 + \$4{,}320 = \$443{,}520$$

4. Final adjustments

Final adjustments This MA does not need the adjustment for small countries since its allocation is already over $75,000, and it does not need the fundraising adjustment since its fundraising is at the average level for the Federation.

This MA's old Needs Allocation was $400,000 and it will be rising to $439,200. This is a growth of $39,200. As a result, its Needs Allocation will grow by $9,800 each year for the first 4 years ($39,200 ÷ 4 = $9,800). This means that in Year 1, its Need Allocation would be $409,800, and in Year 2 it would be $419,600, etc.

Appendix C: Country need metrics

The table below shows the need metrics used for the formula.

The formula captures country need while adhering to two key principles that IPPF MAs have prioritized: (1) using a broad definition of need, including sociopolitical context, and (2) remaining objective and consistent across all countries and regions. As a result, we sought out metrics that were:

- Available for most countries where IPPF works, to create an objective process that applies to all countries (e.g., some great potential metrics were only available for 30 countries, making them less useful)
- Not highly correlated with each other, which would be duplicative (e.g., contraceptive prevalence rate correlates highly with unmet need for contraception)
- Capture the *need* for IPPF's work (e.g., adverse outcome for women and girls), while being agnostic about *how* that need is addressed (e.g., via service-delivery, advocacy, or CSE, since MAs are best positioned to decide)
- Available from objective, respected institutions (as requested in the member survey), which ensures that updated data will be available in future years to update the formula

The original Technical Appendix on the formula's design provides additional detail on the selection of these metrics, as well as others that were considered but that did not meet the criteria above. That appendix also provides justification for the weightings selected.

Metrics (weighting)	Source; additional notes
Unmet need for contraception (20%)	UN Population Division; includes new estimates for both women in and out of unions
Maternal mortality rate (20%)	UN Maternal Mortality Estimation Inter-agency Group; can indicate the need for a range of maternal health services beyond family planning
Adolescent birth rate (20%)	UN Population Division; can serve as a proxy for the level of need among unmarried or young women
HIV incidence rate (5%)	UNAIDS; HIV is the only STI with widely available data
Rate of people with HIV not receiving ART (5%)	UNAIDS; provides detail on the level of unmet need for HIV treatment
Cervical cancer incidence rate (10%)	World Health Organization; given limited data on other STIs, can serve as a useful proxy for burden of HPV
Gender Inequality Index (10%)	UN Development Programme; Rates gender parity in political representation, workforce participation, and educational attainment
Social Institutions and Gender Index (SIGI) - Civil Liberties (2.5%)	OECD; Rates gender parity in citizenship rights, political voice, freedom of movement, and access to justice (based on laws, common practices, and societal attitudes)

Metrics (weighting)	Source; additional notes
SIGI – Access to financial & productive services (2.5%)	OECD; Rates gender parity in access to land and non-land assets, formal financial services, and workplace rights (based on laws, common practices, and societal attitudes)
SIGI – Physical Integrity (2.5%)	OECD; Rates levels of violence against women, female genital mutilation, missing women, and reproductive autonomy
SIGI – Discrimination in the Family (2.5%)	OECD; Rates gender parity in marriage and divorce laws, household responsibilities, and child marriage (based on laws, common practices, and societal attitudes)