Supplementary file

Assumptions:

1- Epidemiological situation is the same between year 1, year 2 and year 3
2- 15 % increase of sample collected per year
3- Cost per cartridge concerning Xpert is stable between year 1 and year 3; while Cost per Test concerning TB-LAMP decrease between year 1 and year 2 and is stable between year 2 and year 3
4- Both algorithm are implemented in same settings

Table 6: Cost estimate for prisons using Algorithm 1 (Testing with Gene Xpert MTB/RIF) for three years

| Items                                           | Algorithm 1: Testing with Gene Xpert MTB/RIF |
|------------------------------------------------|-----------------------------------------------|
|                                                | Year 1 | Year 2 | Year 3 |
| GeneXpert GX-IV (4-Module System) with Desktop and 2-years warranty extension * | 17000 | NA     | NA     |
| Shipment                                       | 1000   | NA     | NA     |
| UPS                                            | 1000   | NA     | NA     |
| Printer                                        | 200    | NA     | NA     |
| Air-conditioners                               | 200    | NA     | NA     |
| 1-year warranty extension – GX-IV (4-Module System) * | NA     | NA     | 2898   |
| Consumables                                    |        |        |        |
| Cost per cartridge *                           | 9.98   | 9.98   | 9.98   |
| Number of tests performed during mass screening campaign (15% increase in collected samples number per year) | 3672   | 4222.8 | 4856.22 |
| Losses due to error/incorrect use (high estimate 10%) | 367.2  | 422.28 | 485.62  |
| Total tests performed                          | 4039.2 | 4645.08| 5341.84 |
| HR costs (per diem) | Year 1 | Year 2 | Year 3 |
|---------------------|--------|--------|--------|
| Technician (160 USD/prison×34 prisons) | 5440 | 5440 | 5440 |
| Medical Doctor (160 USD/prison×34 prisons) | 5440 | 5440 | 5440 |
| Nurses (160 USD/prison) | 5440 | 5440 | 5440 |
| Prison staff (20 USD/prison×34 prisons) | 680 | 680 | 680 |
| TB Regional Coordinator(160 USD/prison) | 5440 | 5440 | 5440 |
| Driver (160 USD/prison×34 prisons) | 5440 | 5440 | 5440 |
| **Total Cost** | **87591.21** | **74237.89** | **84089.58** |

*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on [http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf](http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf). NA: not applicable

Table 7: Cost estimate for prisons using Algorithm 2 (Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF) for three years

| Algorithm 2: Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                                 | Year 1                          | Year 2                          | Year 3                          | Year 2                          | Year 3                          |
|                                 | Equipment *                     | 2870                            | 17000                           | NA                             | NA                             | 2870                            | 17000                           | NA                             | NA                             | 2870                            | 17000                           | NA                             | NA                             |
|                                 | Shipment                        | 800                             | 1000                            | NA                             | NA                             | 800                             | 1000                            | NA                             | NA                             | 800                             | 1000                            | NA                             | NA                             |
|                                 | UPS                             | 470                             | 1000                            | NA                             | NA                             | 470                             | 1000                            | NA                             | NA                             | 470                             | 1000                            | NA                             | NA                             |
|                        |   |   |   |   |   |   |
|------------------------|---|---|---|---|---|---|
| Printer                | NA| 200| NA| NA| NA| NA|
| Air-conditioners       | NA| 200| NA| NA| NA| NA|
| 1-year warranty        | NA| NA| NA| NA| NA| 2898|
| extension – GX-IV      |   |   |   |   |   |   |
| (4-Module System)      |   |   |   |   |   |   |
| Maintenance with       | NA| NA| 1892| NA| 1892| NA|
| warranty extension for  |   |   |   |   |   |   |
| TB-LAMP               |   |   |   |   |   |   |
| Consumables            | 34737.12| 1350.29| 27870.48| 1552.98| 32051.05| 1785.93|
| Cost per cartridge or  | 8.6| 9.98| 6**| 9.98| 6**| 9.98|
| test*                  |   |   |   |   |   |   |
| Number of tests        | 3672| NA| 4222.8| NA| 4856.22| NA|
| performed (estimate 15%|   |   |   |   |   |   |
| increase in collected  |   |   |   |   |   |   |
| samples per year)      |   |   |   |   |   |   |
| Number of tests        | NA| 123| NA| 141.46| NA| 162.68|
| performed with         |   |   |   |   |   |   |
| Xpert (3.315% of TB    |   |   |   |   |   |   |
| LAMP positivity rate)  |   |   |   |   |   |   |
| Losses due to          | 367.2| 12.3| 422.28| 14.14| 485.62| 16.26|
| error/incorrect use     |   |   |   |   |   |   |
| (high estimate 10%)     |   |   |   |   |   |   |
| Total tests performed  | 4039.2| 135.3| 4645.08| 155.61| 5341.84| 178.95|
| HR costs (per diem)          | 27880 | 27880 | 27880 |
|----------------------------|-------|-------|-------|
| Technician (160 USD/prison×34 prisons) | 5440  | 5440  | 5440  |
| Medical Doctor (160 USD/prison×34 prisons) | 5440  | 5440  | 5440  |
| Nurses (160 USD/prison) | 5440  | 5440  | 5440  |
| Prison staff (20 USD/prison×34 prisons) | 680    | 680    | 680    |
| TB Regional Coordinator(160 USD/prison) | 5440  | 5440  | 5440  |
| Driver (160 USD/prison×34 prisons) | 5440  | 5440  | 5440  |
| **Total Cost**              | 66757.12 | 20750.29 | 55750.48 | 1552.98 | 59931.05 | 4683.93 |
| **Total Cost per Year**     | 87507.41 | 57303.46 |       |       |       |       |

*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on [http://www.stophb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf](http://www.stophb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf); **References of prices available available in the GDF diagnostics catalog. HumaLoop T For the prices that are indicated in Euro on the website; Exchange rate: 1€ = 1.13 $, NA: not applicable
Table 8: Cost estimate for villages using Algorithm 1 (Testing with Gene Xpert MTB/RIF) for three years

| Algorithm 1: Testing with Gene Xpert MTB/RIF | Year 1 | Year 2 | Year 3 |
|---------------------------------------------|--------|--------|--------|
| Items                                       |        |        |        |
| GeneXpert GX-IV (4-Module System) with Desktop and 2-years warranty extension* | 17000  | NA     | NA     |
| Shipment                                   | 1000   | NA     | NA     |
| UPS                                        | 1000   | NA     | NA     |
| Printer                                    | 200    | NA     | NA     |
| Air-conditioners                           | 200    | NA     | NA     |
| 1-year warranty extension – GX-IV (4-Module System)* | NA     | NA     | 2898   |
| Consumables                                | 4424.13| 5087.75| 5850.917|
| Cost per cartridge*                        | 9.98   | 9.98   | 9.98   |
| Number of tests performed during mass screening campaign (15% increase in collected samples number per year) | 403    | 463.45 | 532.96 |
| Losses due to error/incorrect use (high estimate 10%) | 40.3   | 46.34  | 53.29  |
| Total tests performed                      | 443.3  | 509.79 | 586.26 |
| HR costs (per diem)                        | 2460   | 2460   | 2460   |
| Technician (160 USD/village×3 villages)    | 480    | 480    | 480    |
| Medical Doctor (160 USD/village×3 villages) | 480    | 480    | 480    |
| Nurses (160 USD/village×3 villages)        | 480    | 480    | 480    |
| Community health workers (20 USD/village×3 village) | 60     | 60     | 60     |
| TB Regional Coordinator(160 USD/village×3 village) | 480    | 480    | 480    |
Driver (160 USD/village×3 villages) & 480 & 480 & 480 \\
\hline
**Total Cost per year** & **26284.13** & **7547.75** & **11208.91** \\
\hline
*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on [http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf](http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf); NA: not applicable

Table 9: Cost estimate for villages using Algorithm 2 (Initial testing with TB-LAMP followed by testing with Xpert MTB/RIF) for three years

| Items                        | Year 1                  | Year 2                  | Year 3                  |
|------------------------------|-------------------------|-------------------------|-------------------------|
|                              | HumaLoopT with 1 year warranty upon purchase | GeneXpert GX-IV (4-Module System with Desktop and 2 years warranty upon purchase) | HumaLoopT with 1 year warranty upon purchase | GeneXpert GX-IV (4-Module System with Desktop and 2 years warranty upon purchase) | HumaLoopT with 1 year warranty upon purchase | GeneXpert GX-IV (4-Module System with Desktop) |
| Equipment*                   | 2870                    | 17000                   | NA                      | NA                      | NA                      | NA                      |
| Shipment                     | 800                     | 10000                   | NA                      | NA                      | NA                      | NA                      |
| UPS                          | 470                     | 1000                    | NA                      | NA                      | NA                      | NA                      |
| Printer                      | NA                      | 200                     | NA                      | NA                      | NA                      | NA                      |
| Air-conditioners             | NA                      | 200                     | NA                      | NA                      | NA                      | NA                      |
| 1-year warranty extension – GX-IV (4-Module System)* | NA | NA | NA | NA | NA | 2898 |
| Maintenance with warranty extension for TB-LAMP* | NA | NA | 1892 | NA | 1892 | NA |
| Consumables                                      | 3812.38 | 131.736 | 3058.77 | 151.61 | 3517.58 | 174.35733 |
|------------------------------------------------|---------|---------|---------|--------|---------|-----------|
| Cost per cartridge or test*                    | 8.6     | 9.98    | 6**     | 9.98   | 6**     | 9.98      |
| Number of performed (estimated 15% increase in collected samples per year) | 403     | NA      | 463.45  | NA     | 532.96  | NA        |
| Number of tests performed with Xpert (2.98% of TB LAMP positivity rate) | NA      | 12      | NA      | 13.81  | NA      | 15.88     |
| Losses due to error/incorrect use (high estimate 10%) | 40.3    | 1.2     | 46.34   | 1.38   | 53.29   | 1.58      |
| Total tests performed                          | 443.3   | 13.2    | 509.79  | 15.19  | 586.26  | 17.47     |
| HR costs (per diem)                            | 2460    | 2460    | 2460    |        |         |           |
| Technician (160 USD/village \times 3 villages) | 480     | 480     | 480     |        |         |           |
| Medical Doctor (160)                           | 480     | 480     | 480     |        |         |           |
| Role                                              | USD/village×3 villages | 480  | 480  | 480  |
|--------------------------------------------------|-------------------------|------|------|------|
| Nurses (160 USD/village×3 villages)              |                         | 60   | 60   | 60   |
| Community health workers (20 USD/village×3 village) |                         |      |      |      |
| TB Regional Coordinator (160 USD/village×3 village) |                         |      |      |      |
| Driver (160 USD/village×3 villages)              |                         |      |      |      |
| **Total Cost**                                   | **10412.38**            | **19531.73** | **5518.77** | **151.61** | **5977.58** | **3072.35** |
| **Total Cost per Year**                          | **29944.11**            | **5670.38** | **9049.94** |

*References of prices: Global Drug Facility (GDF). Diagnostics Catalog 2018. available on http://www.stoptb.org/assets/documents/gdf/Diagnostics_Catalog_2018_WEB.pdf; **References of prices available in the GDF diagnostics catalog. HumaLoop T
For the prices are indicated in Euro on the website. Exchange rate: 1€ = 1.13 $, NA: not applicable