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**The ever-increasing population
growth and its environmental
impact: the importance of a
renewed interest in family planning
programs**

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Presentazione

Il rapido e continuo aumento demografico congiuntamente con la costante necessità di beni e servizi influiscono negativamente sulla sostenibilità ambientale del nostro pianeta e sulla sua capacità di sostenere tale crescita popolazione. Oggigiorno, la comunità internazionale non pone la giusta attenzione al tema della crescita demografica e delle sue ripercussioni a livello ambientale. Rafforzare i programmi e i servizi di pianificazione familiare è necessario al fine di controllare tale crescita e raggiungere un tasso che sia sostenibile per il pianeta. In 70 anni la popolazione terrestre è più che triplicata passando da 2 miliardi nel 1950 a 7 miliardi nel 2011. Secondo le proiezioni calcolate dalle Nazioni Unite, si prevede un incremento della popolazione di 2 miliardi nei prossimi 30 anni, e si passerà così dagli attuali 7.7 miliardi a 9.7 miliardi. Secondo il Global Footprint Network, un'organizzazione internazionale volta a promuovere la sostenibilità ambientale, a partire dagli anni '70, l'umanità si ritrova annualmente in *ecological overshoot* poiché le risorse consumate dalla popolazione corrispondono a 1,7 volte la capacità rigenerativa del nostro pianeta. Una delle principali soluzioni per controllare il consumo e ridurre dunque il deterioramento delle risorse naturali è di agire sul tasso di crescita della popolazione al fine di stabilizzarlo il prima possibile a una percentuale sostenibile per il pianeta. L'obiettivo del raggiungimento di una transizione demografica nei paesi in via di sviluppo attraverso l'applicazione di programmi di pianificazione familiare e di politiche demografiche che siano modellati sulle caratteristiche delle varie popolazioni deve essere posto quale fulcro di interesse dei governi di tali paesi. Un elemento di particolare importanza che influisce enormemente sul tasso di fertilità e che questi programmi dovrebbero mantenere come centrale è la questione dell'emancipazione femminile. Agire sulla valorizzazione ed emancipazione delle donne produce infatti significativi effetti positivi per quanto riguarda la riduzione del tasso di natalità. Ly Phan nel suo saggio *Women's Empowerment and Fertility Changes* evidenzia che numerosi fattori quali un maggiore potere decisionale riguardo all'utilizzo di metodi contraccettivi e al numero di figli, maggiori libertà per quanto concerne l'educazione o la sfera lavorativa e maggiore indipendenza sia a livello economico che decisionale portano

a una riduzione del numero di figli per donna. Il lavoro congiunto di Organizzazioni governative e non governative risulta fondamentale per lo sviluppo di politiche demografiche adatte alle caratteristiche di ciascun paese che permettano di produrre una sostanziale diminuzione del tasso di natalità e una significativa riduzione della pressione futura sulle risorse ambientali.

I tre capitoli della tesi analizzano la correlazione tra crescita demografica e deterioramento ambientale e che mirano a individuare nuove possibili strategie non coercitive per ridurre il tasso di natalità.

Il primo capitolo offre un'analisi dell'evoluzione della popolazione globale dal neolitico fino ai nostri giorni. Attraverso lo studio della nozione di transizione demografica è possibile effettuare una prima generale distinzione tra paesi in cui essa è già avvenuta, come i paesi europei, e i paesi in cui deve ancora avvenire, come l'Africa sub-sahariana o il sud-est asiatico. Grazie all'analisi del *2019 Revision of World Population Prospects*, il 26° rapporto ufficiale sulla crescita demografica mondiale redatto dalle Nazioni Unite, è stato possibile esaminare le proiezioni effettuate per comprendere al meglio le tendenze demografiche regionali attuali e future. Inoltre, grazie alla piattaforma internet Worldometer, è stato possibile analizzare le stime demografiche basando la ricerca su numeri attuali e aggiornati. Secondo l'analisi effettuata dalle Nazioni Unite, la proiezione maggiormente probabile prevede il raggiungimento di 8,5 miliardi di abitanti entro il 2030, e di 9,7 miliardi di abitanti entro il 2050, con una stabilizzazione della popolazione attorno agli 11 miliardi verso il 2100.

Nel secondo capitolo si analizzerà come questo incremento di popolazione porterebbe a conseguenze devastanti a livello ambientale. Da qui la necessità di agire nell'immediato attraverso l'attuazione di politiche demografiche adeguate al contenimento della crescita demografica e alla sua stabilizzazione nel più breve lasso di tempo possibile. La *medium variant projection* sviluppata dalle Nazioni Unite nel *World Population Prospects 2019* può essere comunque considerata una stima al ribasso poiché prende in considerazione l'applicazione di programmi di pianificazione familiari e l'attuazione di sforzi congiunti futuri tra paesi sviluppati e in via di sviluppo finalizzati alla creazione di sinergie per il controllo della crescita demografica globale. Il capitolo inoltre analizza il tasso di fertilità in sei regioni:

Europa, ex paesi Sovietici, area mediterranea, paesi asiatici nello specifico India e Cina, America latina e Caraibi, e il continente africano. Questa analisi mira ad individuare le principali caratteristiche e trend demografici di queste aree al fine di distinguere le regioni che rappresentano una sfida futura per quanto riguarda il controllo della crescita demografica e le aree nelle quali è maggiormente necessario orientare le politiche demografiche. Mentre alcune regioni, ad esempio l'Europa, devono far fronte al problema della denatalità, altri paesi come la Palestina, il Pakistan la zona sub-sahariana dell'Africa e l'India devono far fronte ad una rapida e continua crescita demografica, con tassi di fertilità che raggiungono gli 8 figli per donna. La cultura patriarcale che permea queste società è una caratteristica comune che conduce ad un naturale incremento del tasso di natalità rispetto a società in cui si osserva una maggiore parità di genere.

Come analizzato nell'ultimo capitolo, la differenza di genere, il limitato potere decisionale delle donne e la loro limitata libertà all'interno del nucleo familiare e della società si traducono in un numero maggiore di figli. Ciò avviene poiché la donna deve obbedire al volere del marito e/o della famiglia o deve assicurarsi la sopravvivenza nel nucleo familiare poiché dipende interamente dal marito, dal padre o dai figli maschi in caso di vedovanza. Per quanto riguarda i paesi dell'America Latina e dei Caraibi, si riscontra un elevato tasso di natalità specialmente tra i giovani poiché il fenomeno della maternità adolescenziale è maggiormente diffuso. La mancanza di una sufficiente sensibilizzazione dei più giovani all'utilizzo di metodi contraccettivi e ai servizi di pianificazione familiare e la mancanza di un'educazione sanitaria adeguata sfociano in un elevato tasso di gravidanze in età adolescenziale.

Il secondo capitolo analizza il problema del sovrappopolamento e come esso incide negativamente sull'ambiente terrestre. Una maggiore popolazione richiede anche maggiori risorse, le quali però non sono infinite. Per assicurare uno sviluppo sostenibile e per preservare la possibilità delle generazioni future di soddisfare le loro esigenze, è importante agire tempestivamente indirizzando gli sforzi al miglioramento delle politiche demografiche e dei programmi di pianificazione familiare. Per descrivere efficacemente la situazione ambientale attuale è stata presentata la nozione di *ecological footprint* e la situazione di *ecological overshoot*

nella quale la terra si trova ormai dagli anni '70. Con *ecological overshoot* si intende il fenomeno per cui la richiesta di risorse terrestri da parte della popolazione eccede la loro capacità rigenerativa e la capacità di assorbimento dei rifiuti prodotti. I calcoli effettuati dal Global Footprint Network sono delle stime basate sui dati raccolti in anni di indagine, essi devono essere considerati quali stime approssimative per i limiti riguardanti il calcolo dell'effetto delle azioni umane sull'ambiente. Attualmente l'umanità sta sfruttando l'equivalente di 1,75 pianeti terra e, secondo le stime, entro il 2050 la richiesta di risorse ed energia raggiungerà l'equivalente di 2,5 pianeti terra. In questo contesto, l'esempio del Corno d'Africa è significativo per comprendere quali siano le conseguenze di un eccessivo incremento della popolazione all'interno di uno spazio territoriale limitato e di un'eccessiva crescita della domanda di risorse naturali. A seguito di un significativo incremento della popolazione con un tasso di crescita intorno al 5,3, secondo le stime del 2017, le attività agricole e pastorali necessarie al sostentamento della popolazione si sono intensificate. Inoltre, l'incremento della popolazione globale e l'aumento delle richieste di materie prime e terre coltivabili hanno fatto sì che il corno d'Africa diventasse un territorio sfruttato dall'intera comunità internazionale. Deforestazione, espansione delle industrie estrattive, estensione dei terreni volti all'agricoltura e alla pastorizia e lo sviluppo delle infrastrutture hanno portato effetti devastanti sull'intero ecosistema. Riduzione della biodiversità, desertificazione, erosione del suolo, frane, siccità e aumento di mancanza di acqua potabile e cibo hanno causato lotte intestine e conflitti civili. L'esempio del Corno d'Africa è utile per comprendere ciò a cui la popolazione globale può andare incontro a causa dell'incessante aumento della popolazione e della continua domanda di beni e materie prime. Attraverso le attività umane, la produzione di biossido di carbonio aumenta notevolmente. Come dimostrato dai dati raccolti nell'osservatorio di Mauna Loa, la concentrazione di CO₂ terrestre è notevolmente aumentata raggiungendo i 411,76 ppm nel Dicembre 2019. Questo aumento nella quantità di CO₂ atmosferico porta a perturbazioni nel ciclo rapido del carbonio così da provocare un effetto domino nei vari serbatoi di CO₂. Con l'aumento o la diminuzione della concentrazione di biossido di carbonio, la temperatura terrestre varia di conseguenza, influenzando a sua volta la quantità di vapore acqueo

nell'atmosfera. L'aumento di biossido di carbonio atmosferico innalza la temperatura terrestre, il che determina una maggiore quantità di vapore acqueo e il conseguente incremento dell'effetto serra. Ad oggi, la temperatura è aumentata di 1,5 gradi Fahrenheit. Oltre all'incremento dell'effetto serra e della temperatura atmosferica, l'aumento di carbonio nei serbatoi produce altre conseguenze quali il disgelo del permafrost, l'eutrofizzazione e l'aumento del livello degli oceani.

Agire sulla crescita demografica al fine di rallentare la progressione del riscaldamento climatico e mitigare i suoi effetti è necessario, ma spesso non è una strategia presa in considerazione. L'applicazione di politiche di pianificazione familiare efficaci e che siano strutturate in modo da adattarsi alle caratteristiche e alle differenze di ogni popolazione, lo sviluppo di politiche demografiche non coercitive e incentrate sull'emancipazione femminile sono strategie efficaci al fine di accelerare la transizione demografica e consentire il raggiungimento di un tasso di fertilità che si situi sulla soglia del livello di sostituzione nelle regioni in via di sviluppo. A partire dagli anni '60, in seguito a un eccessivo incremento del tasso di crescita, numerosi paesi hanno iniziato ad applicare programmi di pianificazione familiare e politiche demografiche che hanno permesso di raggiungere il livello di sostituzione generazionale oltre a notevoli avanzamenti nell'area sanitaria e in ambito legislativo, in particolare in merito ai diritti umani. I programmi di pianificazione familiare di quegli anni si concentravano prevalentemente sul rifornimento di metodi contraccettivi, senza assicurare una reale conoscenza dei loro effetti sul corpo umano o delle loro conseguenze. Un esempio è rappresentato dai numerosi paesi, soprattutto Bangladesh, Tunisia e India, che offrivano compensi economici a coloro che si sottoponevano alla sterilizzazione senza offrire simultaneamente una completa informazione riguardo a tali metodi. Il semplice rifornimento di metodi contraccettivi, senza una reale educazione e sensibilizzazione ai programmi di pianificazione familiare, si è dimostrato insufficiente e inadeguato per raggiungere una significativa riduzione del tasso di fecondità, soprattutto in regioni in cui una forte opposizione religiosa e culturale, specialmente in regioni fortemente cattoliche e musulmane, rappresentava un grande impedimento all'utilizzo di metodi contraccettivi moderni. A partire dagli anni '90 dunque, i governi hanno iniziato a concentrarsi sul tema del rispetto dei

diritti umani e dei diritti riproduttivi, in particolare quelli femminili. In questa fase, assicurare un buon accesso ai metodi contraccettivi includeva, oltre a proporli ad un prezzo accessibile a tutti, assicurare servizi sanitari e di pianificazione familiare, sostenere le coppie e guidarle attraverso i numerosi metodi di pianificazione familiare. Creare campagne pubbliche e utilizzare i mass media al fine di sensibilizzare la popolazione, proponendo inoltre una nuova immagine di donna, più emancipata e indipendente, e di famiglia, più ristretta e ricca, come è accaduto attraverso alcune telenovelas Brasiliane, si è dimostrata una strategia estremamente efficace. A causa della scarsità di studi che analizzino la relazione tra programmi di pianificazione familiare, politiche demografiche e tasso di fertilità, l'analisi di questa correlazione si è dimostrato difficile. Esistono pochi studi che si concentrano su tale rapporto poiché, oltre alle politiche demografiche, innumerevoli altri fattori influiscono sulla finale riduzione del tasso di crescita della popolazione. Tuttavia, attraverso l'analisi dei fondi governativi e non-governativi allocati nelle politiche familiari, del *Family Planning Effort Index* del 2001 di J. Ross e J. Stover, e della percentuale di donne esposte ai messaggi promossi dai mass media, è stato possibile estrapolare l'impatto di tali politiche demografiche sul tasso di fertilità così da identificare quali fattori influiscano concretamente sulla riduzione del tasso di fertilità. Seguendo l'analisi proposta da Tiloka de Silva e Silvana Terneyro in *Population Control Policies and Fertility Convergence*, i fondi governativi e non governativi si sono dimostrati di fondamentale importanza per assicurare una buona riuscita dei programmi di pianificazione familiare. Esiste una chiara relazione negativa tra la disponibilità di fondi e il cambiamento dei livelli di fertilità. All'aumentare dei fondi, in particolar modo quelli governativi, la percentuale di fertilità diminuisce. Lo studio sopra citato dimostra come all'aumentare dell'1% dei fondi, ci sia una conseguente diminuzione del 5% della fertilità totale. *L'Effort Index* iniziato negli anni '70 da W.P. Lapham e B. Mauldin e concluso nel 2001 da Ross J. e Stover J. permette invece di comprendere la natura e la forza delle politiche implementate dai governi. Questa analisi si fonda sullo studio di politiche demografiche applicate nell'arco di tre decenni prendendo in considerazione vari fattori quali i servizi e le attività ad essi connesse, la disponibilità delle misure contraccettive e la loro distribuzione. Applicando un punteggio da 0 a 300 basato

sull'analisi di tali fattori, appare chiaro che i programmi applicati nei paesi asiatici siano da considerarsi i più forti e i più efficaci. Infine, analizzando l'esposizione delle donne in età fertile ai messaggi proposti dai programmi di pianificazione familiare, si nota come una maggiore esposizione riduca radicalmente il tasso di fertilità. In questa relazione negativa tra esposizione e tasso di fertilità il livello di educazione femminile rappresenta un fattore significativo. I mass media rappresentano dunque un efficace mezzo di comunicazione attraverso il quale poter modificare le abitudini riproduttive, il numero di figli desiderati, ridurre la maternità giovanile e aumentare l'emancipazione femminile. La necessità di migliorare il livello di emancipazione femminile è determinante per ridurre il livello di fertilità, come è vera la correlazione inversa. Numerosi studi hanno infatti dimostrato che una maggiore emancipazione porta a un tasso di fertilità inferiore, così come un tasso di fertilità inferiore porta a una maggiore emancipazione. I governi, specialmente quelli dei paesi in via di sviluppo, devono investire nei vari fattori che aumentano il livello di emancipazione al fine di ridurre il tasso di crescita della loro popolazione. Come sottolineato da uno studio in Turchia, *Women's Status and Fertility in Turkey* di D.L. Gore, un maggiore tasso di educazione femminile porta a ridurre significativamente il rischio di una seconda gravidanza. Come evidenziato da questo studio, quasi tutte le donne senza istruzione prese in considerazione hanno avuto una seconda gravidanza entro 5 anni dalla prima. Al contrario, solo il 55% delle donne con educazione primaria hanno avuto un secondo figlio entro il periodo di 5 anni. Per quanto riguarda la relazione inversa, una riduzione del tasso di natalità influenza positivamente l'emancipazione femminile anche in culture tipicamente patriarcali. Come analizzato da K. Allendorf in *Like Daughter, Like Son? Fertility Decline and Changing Gender Relations in Darjeeling* in Bengala Occidentale, la diminuzione del numero di figli per coppia ha portato ad una maggiore simmetria tra i generi all'interno delle famiglie. Il minor numero di figli per coppia ha infatti portato i genitori di entrambi i sessi a ridurre la preferenza per i figli maschi, riducendo così le conseguenti disparità di genere e migliorando la qualità di vita delle figlie femmine poiché esse vengono valorizzate maggiormente all'interno del nucleo familiare.

La stretta correlazione tra emancipazione femminile, miglioramento delle condizioni di vita delle donne e riduzione del tasso di fertilità fa sì che il problema delle disparità di genere sia un tema centrale che i paesi in via di sviluppo devono gestire al fine di stabilizzare la crescita della loro popolazione. Le politiche demografiche e i programmi di pianificazione familiare devono dunque impiegare strategie che abbiano alla base il miglioramento della qualità di vita delle donne e una maggiore uguaglianza. La necessità di migliorare il livello educativo delle donne, il loro accesso alla forza lavoro retribuita, aumentare la loro partecipazione nella sfera decisionale del nucleo familiare, soprattutto per quanto concerne la loro libertà nel prendere decisioni riguardanti la sfera sanitaria e riproduttiva, sono elementi fondamentali che devono plasmare le politiche familiari. La mancanza di dati e studi che analizzino la rilevanza dell'impatto di una maggiore emancipazione femminile sul livello di fertilità nei paesi in via di sviluppo ha reso arduo lo studio di tale fenomeno. Ciononostante, attraverso l'analisi di studi effettuati in delimitate zone di territorio e la letteratura esistente, è stato possibile analizzare i principali fattori che influenzano la relazione tra emancipazione femminile e il livello di fertilità. Può essere identificata una stretta correlazione tra quattro principali aspetti dell'emancipazione femminile e il livello di fertilità: il livello di educazione, la partecipazione alla forza lavoro, la partecipazione al processo decisionale e l'utilizzo di contraccettivi. Il livello educativo e la partecipazione alla forza lavoro sono elementi interconnessi tra di loro poiché un maggiore livello di istruzione porta a maggiori possibilità di far parte della forza lavoro. Di conseguenza, l'occupazione femminile porta ad una maggiore indipendenza economica e quindi le donne ottengono un maggiore e più autonomo accesso ai servizi sanitari e all'utilizzo di contraccettivi. Anche una maggiore partecipazione al processo decisionale porta ad avere un migliore controllo della fertilità da parte delle donne. Inoltre, esistono due principali aspetti tipici delle culture patriarcali che influenzano la relazione tra emancipazione femminile e il tasso di fertilità: la predilezione per un alto numero di figli e la preferenza per i figli maschi.

L'istruzione ha un grande impatto sul livello di fertilità delle donne sotto numerosi aspetti. A livello temporale, maggiore è il tempo trascorso a scuola, maggiormente si tenderà a posticipare il matrimonio e la gravidanza, riducendo così

il numero di figli. L'istruzione, inoltre, porta ad avere una migliore conoscenza dei metodi contraccettivi moderni, maggiore cura dei figli e a poter offrire migliori condizioni sanitarie con la conseguente riduzione del numero di morti infantili. A Taiwan per esempio, l'aumento generalizzato del livello educativo femminile ha portato ad avere una decisiva diminuzione del tasso di matrimonio tra il 1970 e il 2007. Inoltre, l'età per il matrimonio è nettamente aumentata, passando da 22,1 anni a 28,1 per le donne e da 28,2 anni a 33 per gli uomini. Un maggiore livello di educazione porta inoltre a maggiori possibilità lavorative e da ciò derivano un'indipendenza economica più salda ed una vita lavorativa più movimentata, il che favorisce una riduzione del livello di fertilità e del tasso di matrimonio. L'utilizzo di metodi contraccettivi moderni è legato sia al livello educativo sia alla libertà della donna nel prendere decisioni riguardanti la sua fertilità. In Egitto, per esempio, dove la cultura patriarcale organizza l'intera società, le donne non hanno libertà per quanto riguarda l'utilizzo di contraccettivi moderni, dunque spesso ricorrono all'amenorrea lattazionale. Ciò porta ad avere un alto tasso di fertilità poiché questo non può essere considerato quale metodo contraccettivo sicuro.

La partecipazione alla forza lavoro è considerata uno dei fattori principali che incidono sul livello di fertilità. Uno dei principali elementi che influenzano questa relazione è l'incompatibilità tra l'aver figli e partecipare alla forza lavoro. Inoltre, avere un lavoro pagato aumenta le possibilità di una donna, aumenta il suo potere decisionale, le sue responsabilità e la pressione sul luogo di lavoro, influenzando così il tasso di matrimonio e di divorzio. Avere un lavoro retribuito porta a dover affrontare un maggiore costo-opportunità nel momento in cui si decidesse di avere un figlio, poiché la gravidanza e il congedo parentale possono impedire l'avanzamento professionale e ostacolare i successi professionali. Le donne che danno maggior importanza alla carriera lavorativa tendono a posticipare il matrimonio e la gravidanza. In questo modo il numero di figli si riduce drasticamente. In Giappone, per esempio, l'aumento della partecipazione femminile alla forza lavoro e il rifiuto dei ruoli domestici tradizionali hanno portato ad un decisivo decremento del tasso di nuzialità e al rinvio della paternità. Una maggiore partecipazione alla forza lavoro retribuita porta ad un aumento del potere decisionale delle donne sia a livello societario che familiare. Ciò comporta un

maggiore controllo sulle decisioni che riguardano la sfera sanitaria e l'assunzione di contraccettivi. In Asia meridionale, le decisioni riguardanti la salute femminile sono prese dalle figure maschili e senza consultare le donne stesse nella maggior parte dei casi. Come analizzato da U. Senarath in *Women's Autonomy in Decision Making for Health Care in South Asia*, ciò accade nella maggior parte del Nepal (72,2 %), in Bangladesh (54,3%) e in India (48,7%). Questa stessa ricerca ha anche dimostrato che il potere decisionale delle donne aumenta proporzionalmente all'aumentare dell'età, del livello educativo e del numero di figli delle donne. Nelle zone rurali del Bangladesh, ad alti livelli di analfabetismo e all'assenza di un lavoro retribuito corrispondono alti livelli di fertilità e livelli estremamente bassi di assistenza sanitaria alle donne. Nonostante gli sforzi messi in atto dal governo, in Bangladesh come in altri paesi in via di sviluppo la cultura tradizionale e la religione rappresentano un forte ostacolo, e consolidano una società basata interamente sulla cultura patriarcale. I governi dovrebbero concentrare i loro sforzi al fine di migliorare il livello educativo, accrescere la consapevolezza delle donne riguardo ai loro diritti e sviluppare la capacità femminile di controllare le risorse familiari, diminuendo così le disparità tra generi e migliorando le condizioni di vita. I programmi di pianificazione familiare, come anche quelli applicati in Bangladesh, spesso non prendono in considerazione gli uomini quali agenti attivi del cambiamento e del miglioramento delle condizioni di vita femminili. La sensibilizzazione e la partecipazione attiva degli uomini è fondamentale per assicurare la buona riuscita delle politiche familiari e il superamento delle rigide norme patriarcali che ancora dominano innumerevoli società.

L'ultimo fattore che influenza la correlazione tra emancipazione femminile e tasso di fertilità è la disponibilità di contraccettivi e le politiche demografiche. La libertà riproduttiva è un diritto umano fondamentale e include tre aspetti: la libertà di decidere la quantità e il distanziamento dei figli, il diritto a ricevere adeguate informazioni e assistenza per regolare la fertilità e il diritto di avere pieno controllo del proprio corpo. L'introduzione della pillola contraccettiva e di altri metodi moderni è stata fondamentale per lo sviluppo di una maggiore uguaglianza tra i sessi, facendo sì che le donne potessero separare liberamente il rapporto sessuale dalla gravidanza. La diffusione dei metodi contraccettivi ha consentito di

raggiungere una riduzione del tasso delle nascite e nel 2019 è stato stimato che il 76% delle donne al mondo utilizzassero metodi contraccettivi moderni per soddisfare i loro bisogni di pianificazione familiare. Nonostante la percentuale di donne che fanno ricorso a metodi contraccettivi moderni sia aumentata significativamente negli anni, il KAP-Gap, il divario tra bisogno contraccettivo e accesso ai metodi di contraccezione, rimane comunque molto elevato in numerose regioni, per esempio in Yemen 28,7%, in Angola e Libya 40%. L'utilizzo di metodi contraccettivi si è dimostrato più efficace nella riduzione del livello di fertilità se accompagnato da programmi di pianificazione familiare che si occupino di educare e modellare i comportamenti di controllo delle nascite delle donne. Paul Schultz nel suo saggio *Population Policies, Fertility, Women's Human Capital, and Child Quality* ha analizzato come le politiche demografiche portino ad un miglioramento generale del benessere dell'intero nucleo familiare. I governi possono infatti finanziare programmi educativi che mirino ad informare le coppie sui metodi contraccettivi. Così facendo possono anche finanziare i servizi medici e sanitari che a loro volta potranno offrire metodi contraccettivi a prezzi ridotti. Inoltre, i governi possono utilizzare i mass-media e la pubblicità in modo da velocizzare la diffusione dell'utilizzo di metodi contraccettivi, accelerando così la diminuzione del tasso di fertilità. Nel suo saggio P. Schultz porta l'esempio dell'esperimento effettuato a Matlab, in Bangladesh. Tale esperimento ha dimostrato l'efficacia delle politiche di pianificazione familiare che avevano l'obiettivo di ridurre il livello di fertilità e di conseguenza di accrescere il benessere delle donne e delle loro famiglie. Questo progetto prevedeva l'utilizzo di operatori sul campo, soprattutto figure femminili, che offrirono consulenza ed educassero le coppie bangladesi alle politiche familiari. I dati collezionati dopo dieci anni dall'inizio dell'esperimento, hanno riportato la diminuzione del 14% del tasso di natalità delle donne bangladesi. Tuttavia, nonostante il declino della fertilità, non sono stati riscontrati miglioramenti nelle condizioni di vita e di lavoro delle donne e delle ragazze. Personalmente ne deduco che ciò non sia avvenuto poiché l'obiettivo di tale programma era principalmente quello di ridurre il tasso di fertilità attraverso il rifornimento di contraccettivi e di educare le coppie in merito al loro utilizzo. Le norme culturali, tipicamente patriarcali, e religiose non sono state prese in

considerazione dal programma e le figure maschili non sono state incluse quali partecipanti attivi al miglioramento delle condizioni di vita della donna. Le norme patriarcali in vigore in numerosi paesi creano barriere che impediscono il raggiungimento di una maggiore indipendenza femminile e favoriscono un alto tasso di fertilità. Tale preferenza per un'alta fertilità si manifesta poiché i figli vengono considerati quale fonte di lavoro, danno maggiori sicurezze economiche durante la vecchiaia dei genitori e rappresentano un mezzo per le donne di migliorare il loro status all'interno del nucleo familiare e a livello societario. La predilezione per i figli maschi invece è presente poiché essi sono considerati maggiormente produttivi e hanno il privilegio di poter tramandare il nome di famiglia. Questi due aspetti culturali producono un notevole impatto sul tasso di fertilità poiché risultano in un alto numero di figli, soprattutto nel momento in cui essi permettono alla donna di aumentare il suo rilievo all'interno della famiglia. Questo fenomeno appare particolarmente significativo nel momento in cui le donne devono vivere in ampi nuclei familiari, spesso con sconosciuti, in cui non hanno sicurezze economiche. In questo caso, avere un alto tasso di fertilità permette alle donne di incrementare il loro prestigio e assicurare la loro sopravvivenza. Un recente studio effettuato dal Demographic and Health Survey (DHS) nella regione di Sahel, in Africa sub-sahariana, sia nelle zone rurali che urbane, le famiglie ampie sono simbolo di prestigio poiché i figli rappresentano l'onore e il rispetto delle famiglie e assicurano la continuità del nome di famiglia. Questa indagine ha inoltre evidenziato la disuguaglianza tra i coniugi. Nonostante le donne in media desiderino meno figli rispetto agli uomini, esse non hanno accesso a metodi contraccettivi moderni e a servizi di pianificazione familiare. In mancanza di sicurezza economica e libertà decisionale, si ha una mancanza di opposizione da parte delle donne che per sopravvivere all'interno di tale società sottostanno al volere delle figure maschili. Inoltre, le precarie condizioni di vita e la mancanza di un'educazione di base porta a un'inadeguata assistenza sanitaria ai figli causando quindi un alto tasso di mortalità. I programmi di pianificazione familiare devono dunque prendere in considerazione gli ostacoli rappresentati dalle norme socioculturali e religiose. Inoltre, la predilezione per figli maschi porta anch'essa ad un estremamente elevato tasso di natalità poiché in questo caso le coppie

continuano a procreare fino a quando raggiungono il numero desiderato di figli maschi. Questo aspetto porta anche ad un elevato tasso di mortalità infantile femminile e a condizioni di vita precarie in cui le ragazze non hanno alcun tipo di libertà e indipendenza, hanno accesso limitato ai servizi sanitari, all'istruzione e spesso soffrono di malnutrizione poiché sono le ultime a potersi nutrire all'interno del gruppo familiare. La riduzione del tasso di fertilità porta ad una maggiore parità tra i sessi, incrementato così l'importanza delle donne all'interno della famiglia. Infatti, come è stato dimostrato in India e in Pakistan, con la riduzione del tasso di fertilità, le figlie femmine hanno potuto sperimentare una maggiore parità tra i sessi, maggiori libertà e opportunità migliori. In Pakistan, come riportato da L. Phan in *Women's Empowerment and Fertility Changes*, al ridursi del tasso di fertilità i genitori diventassero gradualmente indifferenti al sesso dei figli e in alcuni casi arrivassero anche a preferire le figlie femmine. È dunque necessario riorganizzare i programmi di pianificazione familiare al fine di poter assicurare strategie più adeguate ed efficaci. La creazione di programmi adatti alle caratteristiche culturali delle varie regioni che includano attori su vari livelli, dalle sfere politiche più elevate ai responsabili locali, è necessaria al fine dello sviluppo di politiche demografiche valide. I programmi di pianificazione familiare devono dunque includere attori quali politici, leaders comunitari, organizzazioni non governative, e devono prevedere l'utilizzo dei mass media e degli attori sanitari. L'inclusione di politici ad alto livello permette di assicurare risorse sufficienti ai programmi di pianificazione familiare e la giusta visibilità. I governi dei paesi in via di sviluppo stanziavano in genere meno dell'1% dei loro budget nazionali in investimenti per i programmi di pianificazione familiare e politiche demografiche. Secondo la Dichiarazione di Abuja del 2001, i paesi africani dovrebbero stanziare almeno il 15% in ambito sanitario ma in Uganda, per esempio, nel periodo 2017/2018 è stato stanziato solamente lo 0,73%. L'inclusione e la sensibilizzazione di politici permette una maggiore visibilità di tali programmi a livello nazionale e l'implementazione di riforme adeguate che permettano di far fronte alle numerose barriere che impediscono una efficiente applicazione di tali programmi. Le barriere geografiche ed economiche, per esempio, sono estremamente significative. I governi spesso si basano sul preesistente servizio sanitario per concentrare i fondi statali, dunque essi

vengono investiti in centri ospedalieri e sanitari nelle grandi città. Attraverso un maggiore coordinamento e collaborazione tra le figure politiche di alto livello e le autorità regionali e locali, è possibile decentralizzare il sistema sanitario al fine di permettere alle autorità locali di gestire le risorse. Ciò permette inoltre di concentrare le risorse nell'assistenza sanitaria di base e in quella preventiva. Inoltre, attraverso una maggiore conoscenza da parte delle autorità locali della realtà e delle difficoltà del loro distretto, è possibile implementare programmi e rivolgere gli sforzi a far fronte a tali difficoltà e a non escludere i gruppi maggiormente emarginati. In Brasile, per esempio, a partire dagli anni 90 il governo ha implementato numerose riforme statali al fine di creare un servizio sanitario preventivo decentrato e low-cost che fosse universalmente utilizzabile. Questo nuovo approccio ha consentito a numerose donne di accedere al servizio di salute riproduttiva femminile abbattendo così le crescenti disuguaglianze che si stavano sviluppando sul territorio. Per sviluppare tale approccio, il governo ha ristrutturato i servizi sanitari primari basandosi su strategie aventi come fulcro le comunità, così decentralizzando il più possibile il sistema sanitario. Così facendo, le municipalità e le autorità locali hanno ottenuto maggiore potere per migliorare e ravvivare i programmi di pianificazione familiare adattandole alle necessità dei singoli distretti. Creare una sinergia tra politici e autorità locali permette dunque sia di creare nuove strategie più efficaci e maggiormente adeguate alla realtà territoriale, sia di sviluppare nuovi accordi con il settore privato al fine di raccogliere nuovi finanziamenti. Inoltre, permette di coordinare i programmi di pianificazione familiare sia a livello nazionale che locale. Sono le autorità locali infatti ad avere una maggiore consapevolezza della realtà sociale e possono promuovere programmi personalizzati in base alle norme sociali, agli usi e costumi e alla religione di ciascuna comunità. Leader della comunità quali rappresentanti religiosi, rappresentanti sanitari, politici e responsabili dei gruppi giovanili possono rapportarsi direttamente con la comunità così da abbattere le barriere che impediscono una maggiore emancipazione femminile e una maggiore adesione ai programmi di pianificazione familiare. Soprattutto nelle zone rurali africane, dove i leader religiosi rimangono il punto di riferimento della comunità, essi devono essere resi partecipi e inclusi nel processo di sensibilizzazione e nell'applicazione

di tali programmi. Essi possono direttamente partecipare al miglioramento della parità tra i sessi aumentando l'esposizione alle informazioni, incrementando la conoscenza sia a riguardo delle buone pratiche sanitarie di base che riguardo ai metodi moderni di contraccezione. Essi possono promuovere la sensibilizzazione delle figure maschili così riducendo i fattori che portano a una mancanza di potere delle donne. In Bangladesh per esempio, il progetto sviluppato nel 2004 dalle autorità locali in sinergia con la Bangladesh Agricultural University ha permesso di aumentare l'accesso delle donne della comunità ad attività redditizie. I dati raccolti numerosi anni dopo hanno dimostrato un netto incremento di potere da parte delle donne all'interno del nucleo familiare e comunitario. L'importanza di includere il settore privato nelle politiche demografiche è fondamentale. Le associazioni di pianificazione familiare possono infatti rivolgersi più facilmente alle aree più remote, in cui i programmi di pianificazione familiare e sanitari sono applicati con difficoltà. Una maggiore collaborazione tra stato e il settore privato permette di modellare le politiche demografiche e i programmi in modo da renderli maggiormente adeguati sia a livello nazionale che locale. Il settore privato e le organizzazioni non governative, grazie alla loro significativa influenza, possono giocare un ruolo fondamentale, mettendo in connessione i rappresentanti delle organizzazioni locali con le sfere politiche nazionali. In Marocco, per esempio, 76 organizzazioni non governative collaborano con i rappresentanti politici per sviluppare riforme e implementare politiche che si adattino alla realtà sociale. In Brasile, invece, le organizzazioni private sono state i precursori del dibattito riguardo la salute riproduttiva e i diritti delle donne. Attraverso la collaborazione tra governo e settore privato, lo stato ha ridefinito l'agenda sanitaria nazionale e ha posto tali tematiche al centro dell'interesse del pubblico e politico. Questo ha permesso di amplificare l'interesse e la partecipazione di aziende private commerciali e farmaceutiche allo sviluppo di accordi per i programmi di pianificazione familiare. In un sistema decentralizzato dove i servizi sanitari e sociali sono organizzati a livelli di governo inferiori, il che accade spesso nei paesi in via di sviluppo, le organizzazioni non governative possono colmare le lacune dei servizi supportati dallo stato. In Papua Nuova Guinea, per esempio, la Marie Stopes Papua New Guinea ha sviluppato una partnership con il governo papuano in modo

da offrire ai cittadini servizi di pianificazione familiare, medici e collegati alla sfera riproduttiva. Infine, un uso amplificato dei mass media è necessario per assicurare un'adeguata visibilità e diffusione dei programmi di pianificazione familiare. I mass media infatti rappresentano il mezzo di diffusione più economicamente vantaggioso e permette di raggiungere un ampio pubblico. L'esposizione ai messaggi di pianificazione familiare proposti tramite i mass media producono infatti un notevole impatto: aumentano l'utilizzo di metodi moderni di contraccezione, riducono il desiderio di figli e propongono nuove immagini di emancipazione femminile. I mass media sono inoltre considerati fonti attendibili di informazioni, hanno dunque la capacità di diffondere informazioni migliorando la conoscenza dei cittadini per quanto riguarda i metodi di pianificazione familiare e sensibilizzare riguardo ai rischi legati alla mancanza di controllo della fertilità quali malattie infettive, gravidanze adolescenziali e aborto. In Nigeria, nonostante l'utilizzo di messaggi trasmessi tramite mass media quale strategia dei programmi di pianificazione familiare, in alcune zone rurali essi non hanno avuto l'esito desiderato e il tasso di adozione di metodi di controllo della fertilità è rimasto basso. Questo fenomeno è stato attribuito al fatto che il contesto culturale fosse tipicamente patriarcale e che ad un alto numero di figli corrispondesse un maggiore prestigio familiare. Questa situazione è esemplificativa per comprendere l'importanza di come non si possano fondare le campagne di promozione del controllo delle nascite unicamente sulla diffusione di metodi contraccettivi, bensì sia necessario sviluppare nuove strategie per modificare le norme culturali alla base della società che influenzano il tasso di fertilità. In Brasile infatti, attraverso le telenovelas il governo ha introdotto una nuova immagine di famiglia fondata sull'uguaglianza tra i sessi e ha proposto esempi di donne forti e indipendenti, istruite e in grado di partecipare alla forza lavoro. Inoltre, l'idea di nucleo familiare è stata modificata a favore di famiglie ristrette e abbienti. I governi dovrebbero dunque porre maggiore attenzione sui messaggi proposti dai mass media e cercare di agire attraverso di essi per modificare le usanze culturali che portano ad un alto tasso di natalità.

Abstract

This master thesis aims at giving an overview on how the continued and rapid population growth impacts the environmental sustainability of our planet and examines the main instruments that the international community can use in order to control this unprecedented growth: family planning programs and policies. Over the past 50 years humans have dramatically changed entire ecosystems to meet the needs of a growing population: the constant need for food, fresh water, fuel, fibre, timber depleted Earth's natural resources and damaged the capacity of life-supporting ecosystems. Such unstoppable consumption together with the increasing world population were responsible for most of the global environmental damage. The need to strengthen family planning programs and population policies is crucial to reduce the total fertility rate and limit the population size to a sustainable number. Family planning programs represent a crucial tool to reduce the fertility rate and empower women, especially in developing countries, where women still must face many barriers, cultural, economic and geographical, in order to make use of methods of contraception. Environmental debates and conservation programme planners generally do not give the right importance to population issues, probably since there is a lack of scientific expertise or because addressing population growth issues can be considered too controversial. However, implementing qualitative and efficient family planning programs can produce substantial effects on population growth, therefore dramatically decreasing pressures on the environment. In order to reduce the excessive population growth in developing countries, women's empowerment has been identified as the key factor on which governments must focus to develop adequate policies toward the achievement of a lower fertility rate worldwide.

The thesis is divided in three parts. The first one, "The analysis of population growth", provides a study of population growth since ancient times until nowadays. Moreover, this chapter presents the analysis of the population growth prospects developed by the United Nations and published in 2019. A deeper investigation of the fertility rate is later conducted on six different areas: Europe, The Former Soviet countries, the Mediterranean area, India and China, Latin America and the Caribbean and the African continent. This section aims at analysing the fertility trends that characterize these board areas in order to introduce the strengths, weaknesses and future challenges that such

countries must face. While some countries are already facing problems concerning low birth rates and the ageing population, some others such as Asian countries and specifically the sub-Saharan region will experience a dramatic demographic increase that will cause problematic consequences at the environmental level.

The second chapter focuses on the negative consequences that population growth will cause on entire ecosystems. The aim of the chapter is to underline the tight connection between environmental and development issues. World population increase will reach 10.9 billion people by 2100, according to the latest UN projections, and this phenomenon will put earth's natural resources even more at risk. Family planning programs, among other tools, are crucial instruments to act on the fertility rate in order to ensure a population number that will be sustainable and affordable for the Earth. The notion of Ecological Footprint that is examined in this chapter is necessary toward a better understanding of how much the actual situation is critical. Since 1970s, the global annual demand for resources exceeds the capacity of the Earth to produce them. Obviously, the Ecological Footprint metric and the notion of Ecological overshoot are only estimates and calculations based on the United Nations or UN affiliated data sets. They still present many limitations for analysing the complexity of environmental issues related to human action and the carbon footprint, however, they are essential tools useful in order to help people measure and manage the use of resources and explore their sustainability. The example of the case of the Horn of Africa is revelatory to better understand the harmful consequences that an excessive population growth and the uncontrolled demand for resources may cause on the environment. The excessive anthropic production of carbon dioxide due to the extensive demand for resources and the increasing population are undermining the natural balance of the carbon cycle. As analysed in the second chapter, variations in the carbon cycle bear many detrimental effects to life sustaining ecosystems such as the rise of the global temperatures, eutrophication, the acidification of oceans, defrosting of the permafrost, melting of ice and glaciers and the consequent raise of the sea level.

Moving to the third and final part, the thesis focuses on the efforts that the international community and the developing countries should make in order to address the issue of demographic growth. The initial part of the chapter presents an investigation

of how family planning programs and policies evolved since their first application during the 60s. Owing to the growing attention in population related topics experienced during the 90s, policies and programs developed toward the creation of more adequate and comprehensive strategies tailored to respond to the different characteristics of the population. Throughout the analysis of many policies and programs applied worldwide, strengths and weaknesses of such programs are underlined in order to outline the possible future needs in repositioning and reshaping family planning. The main objective of the broad analysis carried on is to define the strategies and the approaches on which government should focus in order to create more appropriate future programs. I decided to put the focus on women's empowerment and the impact that it can produce on the overall fertility level. The importance of empowering women in all spheres of life should be a core element of population policies. In my analysis, I underlined four major aspects of women's empowerment that are closely related to fertility and that must represent the focus of population policies implemented. Evidence collected throughout the investigation clearly show the tight connection between women's rights and the average fertility level. Cultural, religious and social practices that undermine feminine empowerment should be directly addressed by governments. Several examples of successful family planning program practices that aimed at empowering women are brought to attention. In this framework, repositioning family planning in order to prioritize women's empowerment requires the deployment of powerful actors and effective channels of communication. The final part of the thesis presents efforts that have been taken and that should be employed in future in order to face barriers that still trigger a broader gender equality. The importance to mobilise actors such as high-level policymakers, the private sector, religious leaders or local leaders is essential in order to ensure appropriate funding to family planning allocations and to implement programs suitable for the community's social and religious norms. Moreover, a broader use of Media represents a powerful tool toward the achievement of a wider audience that is highly susceptible to mass media messages.

Sources used in the first chapter mainly include websites, since updated data concerning the general population growth and fertility rates relative to each country or region were needed in order to accurately present today's framework. Thereafter, mostly scholar publications, scientific magazines, government documents, dissertations and

conference proceedings have been considered. The number of books and monographies covering the topic of women's empowerment and population policies is limited. Consequently, scholar publications, university and international organizations working papers and government documents represent the primary sources of the thesis.

I decided to address the broad issue of population growth, environmental damages and family planning programs since in my opinion it represents a current problem that is usually left aside in the international debate. The catastrophic pressure that the growing population is imposing on natural resources and the challenge to ensure a sustainable development for the future generations are current problems that must be immediately addressed by governments through a series of combined efforts. During my researches on the issue, I identified the application and the strengthening of family planning programs mainly based on women's empowerment as the key strategy to follow in order to slow down population growth. Evidently, the issue of population growth affects everyone worldwide. Consequently, efforts must be made both by developed and developing countries in order to create synergies to develop more comprehensive and adequate programs that fit the characteristics of each population. The thesis aims at identifying appropriate and modern focal points necessary to reshape family planning programs and policies.

Introduction

Jean-Loup Bertaux, French astronomer and Director Emeritus for research at Centre National de Recherche Scientifique, in his book *Démographie, climat, migrations: l'état d'urgence* writes:

“La Terre n’est pas bien gérée par ses habitants: nous l’usons à un rythme qu’elle ne peut supporter, principalement à cause de notre trop grand nombre. Changement climatique, déforestation massive, disparition des espèces, épuisement du pétrole et des ressources en poissons, augmentation des prix des matières premières, extinction des espèces, pollution aggravée, émeutes de la faim, émigrations massives non souhaitées, sont des conséquences d’un seul fait: il y a trop de monde sur la planète.”¹

Nowadays, population growth is an extremely relevant topic and people seem to be more and more concerned about it. The demographic explosion has already taken place as human population passed from 2 to 7 billion inhabitants in 70 years. Human population has more than tripled and this is the consequence of not having readjusted the birth rate to the drastic decrease of infant mortality. Humanity should start facing the fact that natural resources are not unlimited. The earth only can host two billion inhabitants without wearing, but in 2017 we are already 7 billion and the 2100 prospect is of 11 billion.

The 2015 United Nations Climate Change Conference, held in Paris from November until December 2015, was the 21st session of the Conference of the Parties (COP) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 11th session of the Meeting to the Parties (CMP) to the 1997 Kyoto Protocol.² The Conference, during which the Paris Agreement was negotiated, hasn’t taken into account the overpopulation problem, the underlying problem of climate change. Within this conference every country accepted to produce less carbon dioxide,

¹ BERTAUX, Jean-Loup, *Démographie, climat, migrations: l'état d'urgence*, Fauves editions, September 2017

² https://en.m.wikipedia.org/wiki/2015_United_Nations_Climate_Change_Conference, 2015 United Nations Climate Change Conference, Wikipedia

commonly known as CO₂, but the demographic topic has been ignored. In his book *Démographie, climat, migrations: l'état d'urgence*, Jean-Loup Bertaux clearly explains the relation between the number inhabitants of the Earth and the global consumption. He presents the equation:

$$\text{Global consumption} = \text{medium consumption} \times \text{number of people (1)}$$

That can also be read with considering the pollution

$$\text{Global pollution} = \text{medium pollution} \times \text{number of people (2)}$$

According to him, the earth can only produce a certain quantity of resources every year and we can assimilate those resources to a cake shared by the population. Consequently, we can choose between a lot of humans with the right to have a smaller slice of cake or less humans with a bigger one. Actually, as J.L. Bertaux explains, the cake that is being consumed by the population is bigger than what we could actually consume without wearing the Earth. In order to limit the global pollution, we should modify one or both terms of the equations 1 and 2. Until now, the debate around this topic has only been focused on the medium consumption or on the medium pollution term but only few focused on the number of inhabitants which is actually the main term that has to be reduced.³

Many climate models have predicted that without a vigorous action against climate change, the global temperature will increase of 4°C in 2100 and of 8°C in 2200. According to this prediction broad areas, especially in Africa, will be no more habitable causing many migratory flows towards Europe. If we count 30 years from a generation to another, there are six generations between us and 2200. The actions realised nowadays will only produce some results in tens of years but if we act now, they will still have the time to make a positive impact before the deadline.

³ BERTAUX, Jean-Loup, *Démographie, climat, migrations: l'état d'urgence*, Fauves editions, September 2017

I – The analysis of population growth

The global population has gone through many phases of demographic growth. The earliest estimations that we can find about world’s population, called “population of the role” at that time, date back to the 17th century. More precisely, in 1682, William Petty estimated that world population was at 320 million. Then, in the late 18th century, world population was estimated at one billion. ⁴

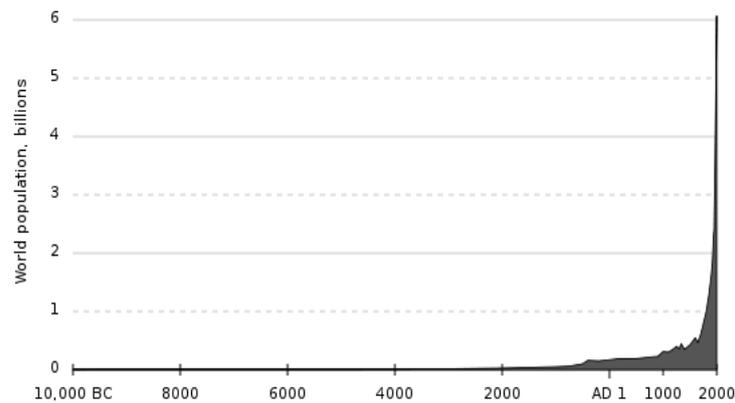


Figure 1. *Estimates of population evolution since Neolithic era until nowadays* ⁵

1.1 Ancient and post-classical history

Modern estimations were made about the demographic growth over the centuries. At the time of agriculture, in 10,000 BC, evaluations estimate that the human population fluctuated between 1 million and 15 million. ⁶ During that period, overcrowding of cities was experienced and it led to the rise of diseases that affected population growth. Plagues, smallpox, measles, dysentery and typhus managed to decrease world’s population. The Plague of Justinian (541-542 AD) during the Roman Empire under the emperor Justinian, one of the most devastating plagues that occurred over world’s history, made world

⁴ *The monthly magazine 4, Calculation of the Inhabitants of the Globe*, p.167, July-December 1797

⁵ https://upload.wikimedia.org/wikipedia/commons/b/b7/Population_curve.svg, Population Curve, US Census Bureau

⁶ TELLIER, Luc-Normand, *Urban world history: an economic and geographical perspective*, p.26, Presses de l’Université du Québec, 2009

population fall around 50 percent.⁷ The estimation of the deaths are between 25 and 40 million people.⁸ During the 14th century, the Black Death pandemic, also called Great Plague, reduced even more the world's population. It spread from China and reached western countries. Estimations count that population had been reduced from 450 million in 1340 to 350 and 375 million in 1400, almost one-third to one-quarter of the population.⁹

1.2 Modern times

The Agricultural and Industrial Revolutions led to an increase in life expectancy. Technological innovations, advancements in medical treatments and in sanitation succeeded in expanding life expectancy even of people who suffered from illnesses, especially children's life expectancy. In London, for example, there had been a severe decrease in child mortality before the age of five: it decreased from 74.5 percent in 1730-1749 to 31.8 percent in 1810-1829.¹⁰ In only two centuries, from 1700 until 1900, the population of Europe increased from 100 million to more than 400 million inhabitants and deaths significantly dropped in all countries that were undergoing revolution. Significant growth factors have been the improvement in material conditions of the population and improvements in medicine, such as the introduction of vaccination. During the 19th century, Britain experienced an increase from 10 million to 40 million people and in 2006 its population reached 60 million inhabitants.¹¹ In addition, the belief that a larger population was the main reason for a country to be richer became popular. Even Frederick II, the king of Prussia, was persuaded that the number of citizens of a country made the wealth of it. In opposition to this belief, the physiocrats stated that population growth would lead to a widespread poverty and suffering since land was believed to be the only foundation for economic production.

⁷ <https://www.nationalgeographic.com/science/health-and-human-body/human-diseases/the-plague/>, *Plague*, Plague Information, Black Death Facts, National Geographic, Retrieved November 3, 2008

⁸ ROSEN, William and CAPE, Jonathan, *Justinian's Flea. Plague, Empire and the Birth of Europe*, p.3, 2007

⁹ https://www.census.gov/population/international/data/worldpop/table_history.php, *Historical estimates of the world population*, Census.gov., Retrieved November 12, 2016

¹⁰ http://www.bbc.co.uk/history/british/victorians/foundling_01.shtml, *The Foundling Hospital*, BBC History, 22 April 2013

¹¹ <http://news.bbc.co.uk/1/hi/uk/5281360.stm>, *Uk population breaks through 60m*, BBC News, 24 August 2006

During the 20th century, the developing countries population grew very quickly due to improvements in public health, sanitation and economic development. In 1941 the Indian population increased from about 125 million inhabitants in 1750, to almost 389 million. Nowadays the Indian subcontinent together with Pakistan and Bangladesh account for about 1.63 billion people.¹² In the early 21st century, Brazilian population accounts for almost 3 percent of the global population, it increased from about 17 million in 1900, to almost 176 million in 2000. Regarding the African subcontinent, in eighty years, from 1920s until 2000, the population of Kenya increased from 2.9 million to 37 million inhabitants.¹³

1.3 The Demographic Transition

The term *Demographic Transition* is usually referred to a model that describes the changes that a population undergoes over the years. This model is employed to talk about a country or a group where the fecundity level (number of children per woman) strongly reduces as a result of a reduction in child death. Consequently, the model makes an analysis of the shifts that a country undergoes in its demographics from high birth rates and high infant death rates to demographics of low birth rates and low death rates. The first phenomenon can be observed in countries where the economic, educational and technological development domain are little developed, whereas the second one is experienced by countries with advanced technology, education and economic development.¹⁴

The model has been built over the observations made by Warren Thompson, an American demographer, in 1929, about the demographic shifts occurred over years in some countries. In 1934, Adolphe Landry made similar remarks regarding the ability of population to grow over time and its demographic patterns. Frank W. Notestein was the

¹² <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2119rank.html#in>, *The World Facebook - Central Intelligence Agency*, January 2017

¹³ <https://www.nytimes.com/2008/01/17/opinion/17iht-edheinsohn.1.9292632.html>, *Kenya's Violence: Exploding population*, The New York Times, July 2013

¹⁴ https://en.m.wikipedia.org/wiki/Demographic_transition, *Demographic Transition*, Wikipedia

first who developed a more formal demographic transition model.¹⁵ He argued that human fertility and mortality changed in response to “rather well-known factors, some of which are in a measure predictable”.¹⁶ He conceived a four stage model that described the process of demographic transition of a population from an high fertility rate and an high mortality rate, to a more advanced and stable pattern, with a low fertility rate and consequently also a low mortality rate. As shown in Figure 2, the Demographic Transition Model is made up of four different stages of transition describing different moments of population development.

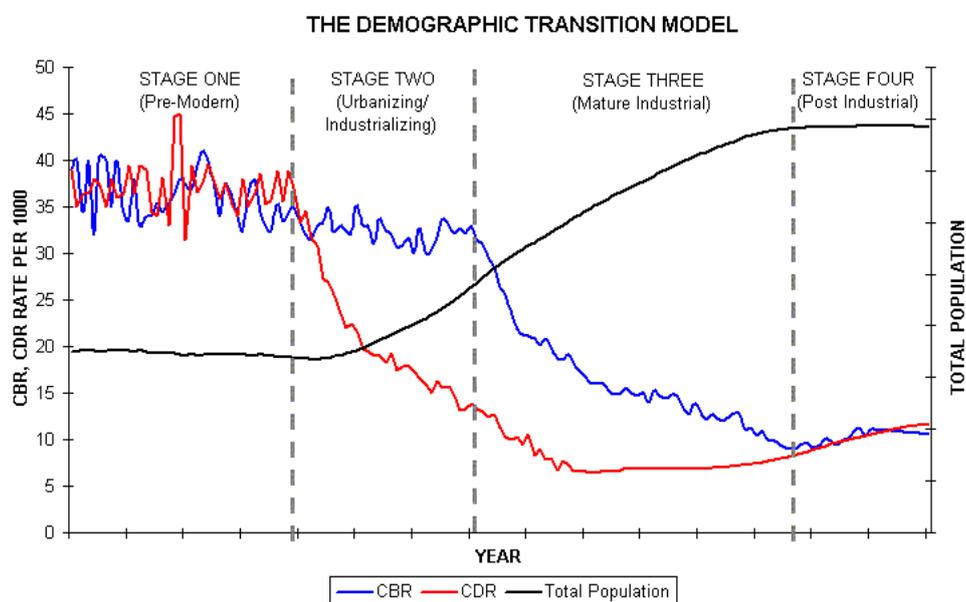


Figure 2. *The Demographic transition Model. The graph shows the Crude Birth Rate (CBR), blue line, and the Crude Death Rate (CDR), red line. The demographic trend is represented by the dark line. The CBR and the CDR represent birth and deaths in a given year for every 1000 persons, respectively. The graph shows the four stages of transition that make up the demographic transition model. The transition from high CBR and CDR in the first stage to a low rate of births and deaths in stage four simultaneously with an increase in the total population is represented.*¹⁷

¹⁵ <https://pages.uwc.edu/keith.montgomery/Demotrans/demtran.htm>, MONTGOMERY, K., *The Demographic Transition*, Department of Geography and Geology

¹⁶ *Population. The Long View*”, ed. Food for the world. Chicago, University of Chicago Press, Frank Notestein, 1945

¹⁷ <https://pages.uwc.edu/keith.montgomery/Demotrans/demtran.htm>, MONTGOMERY, Keith, *The Demographic Transition*, Department of Geography and Geology

Stage One generally occurred in fully developed countries like the United States and Europe during the premodern period and it presents an equivalence between the crude rate of births and that of deaths. The population growth is very slow, less than 0.05 percent as both birth and death rates are very high. Until the 18th century, this situation was similar everywhere in the world. With the Agricultural Revolution, this balance was broken in Western Europe. Demographers usually refer to Stage One as the “High Stationary Stage” of population growth or as “Malthusian stalemate”, from the name of the demographer and economist Thomas Robert Malthus, as the total population number was stationary to high birth and death rates. The origin of such high rate of death included the lack of knowledge regarding disease prevention and the casual food shortages. The main problem was the lack of clean drinking water and the lack of food hygiene that produced a high rate of child death and lead to the development and the spread of diseases such as typhus, cholera and dysentery. Sudden, severe increases in death rate were generated by plagues of epidemic diseases such as the Scarlet fever, the Plague of Justinian (541-542) and the Great Plague (1347- 1351). Stage One has been shared by all regions in the world up until the 17th century.

With Stage Two there is a rise in population growth rate as the death rate decreases but the birth one remains stable. Due to the *Agricultural Revolution* the birth rate decline began in the late 18th century, especially in North-western Europe and spread across South and East Europe over the next 100 years. At the beginning, the decrease in death rate is due to two factors: first, owing to the improvements in agricultural practices such as the implementation of crop rotation, seed drill technology and selective breeding, the agricultural output raised and the supply in food increased. Another important factor that led to higher yields was the importation of the potato and of the corn from the Americas that made European diet, especially the Northern one, more varied. In England, for example, people were able to marry earlier due to the greater wealth brought by the Agricultural Revolution and simultaneously the birth rate slightly raised. Secondly, the improvement in public health, in food supply, food handling and personal hygiene led to an important decrease in mortality, especially during the childhood. The decrease in mortality and the increase of the gap between deaths and births led to a rapid increase in population growth. Stage Two characterised the last two centuries and affected the age structure of the population increasing the survival in children and subsequently increasing

the youth rate. An intensification of this tendency occurs when children enter the reproductive age while maintaining the high fertility rate of their parents.

Stage Three shows the beginning of the stabilisation of the population due to a decrease in the birth rate. This decline began in developed countries by the end of the 19th century in Northern Europe. Many factors contributed to this decrease: urbanization changed the social values related to fertility and the value of children in rural society. Urbanization also changed the costs of children for a nuclear family. The increase in female literacy and employment led to a change in the traditional patterns of thinking: the perception of women beyond the fact of being mothers, their influence in childbearing decision. The entrance of women in the workforce made them break their isolation and the relationships they created with other women made their life broaden beyond the family. Moreover, during the second half of the 20th century important improvements in contraception were made. Anyway, the most important fact that led to a decrease in birth rate was the change in values. By the end of Stage Three, the fertility rate falls to replacement level, consequently the population remains stable from generation to generation.

In Stage Four, there is a stabilisation of population growth and the age structure becomes older. Under certain circumstances population starts declining as fertility rate falls below the replacement rate.

In a country in which the demographic transition has already been accomplished, population stabilises, does not increase anymore, and in certain situations it even decreases. This transition has already happened in many countries around the world either for coercion or for natural reasons. Examples of coercion are China and Singapore. In those countries, population control policies, such as the one-child policy and the two-child policy designed to control the growth of the population, have been applied over the years. The restrictions implemented influenced the number of children that a couple could beget consequently reducing the fertility rate. On the other hand, examples of

demographic transition due to natural reasons are Russia, Japan, Germany and Italy, in which the number of inhabitants has naturally decreased¹⁸

1.4 Future population evolution and the *World Population Prospects*

In 2019, the United Nations made the revision of the *World Population Prospects*. The 2019 revision is the 26th edition that has been produced by the United Nations. The analysis carried out is based upon four global demographic mega trends: population growth, population ageing, migration and urbanisation. Throughout this document, governments can make predictions and develop adequate policies and programs adjusted to those future trends. The analysis of those three mega trends provides a support to all governments worldwide as they have important consequences on economic and social areas and on environmental sustainability.¹⁹ *World Population Prospects* give an estimation of the population growing rate from 1950 until nowadays and consider 235 countries or areas. Projections data are fostered by analyses of historical demographic tendencies. Moreover, in order to make more accurate estimations, in the 2019 *Prospects*, UN considered the result of 1690 national population censuses carried out between 1950 and 2018 and information collected from birth statistics and 2700 national sample surveys. Through this work, UN also did population growth rates forecasts up to the year 2100. UN 2015 projections established three different growth scenarios that were called *low*, *high* and *medium*.

The *low projection* has already been excluded in 2014 as it forecasted a level of 7,2 billion inhabitants in 2020 and this number has already been reached in 2014. In 2017, there were already 7,5 billion people.²⁰

¹⁸ MONTGOMERY, Keith, <https://pages.uwc.edu/keith.montgomery/Demotrans/demtran.htm>, *The Demographic Transition*, Department of Geography and Geology

¹⁹ *World Population Prospects 2019: Highlights*, United Nations, Department of Social and Economic Affairs, Population Division, June 19, 2019

²⁰ BERTAUX, J., *Démographie, climat, migrations: l'état d'urgence*, Fauves editions, September 2017

The *medium prediction* expects a steady increase and a very high population growth rate. The population is expected to reach the 14 billion inhabitants in 2100, with a population growth that does not decrease over the years. The medium projection is the most realistic one, it forecasts a decrease in the population growth rate and 9,2 billion inhabitants in 2057.

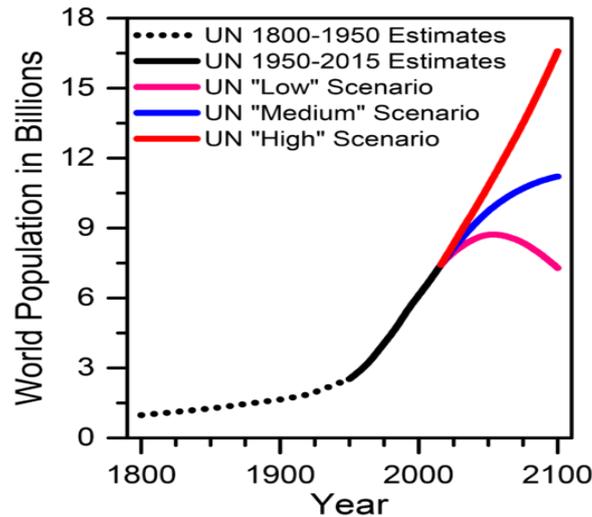


Figure 3. This graph shows the estimated world population from 1800 to 2010. All data was sourced from the United Nations. Projected population after 2015 are the UN's three projection types. The UN low scenario is represented in pink, the medium one is represented in blue and the high scenario is represented in red.²¹

The 2019 *World Population Prospects* takes up again the medium-variant projection already presented in the 2005 prospect and incorporates it with more data. In mid-2019, the world population reached its highest peak with 7.7 billion inhabitants, one billion more than 2007 and two billion more than 1994.²² Thanks to platforms such as Worldometer, a global population projection based on real-time estimation is constantly provided.²³

²¹ https://www.census.gov/population/international/data/worldpop/table_history.php, 7 August 2016

²² *World population prospects 2019: Highlights*, United Nations, Department of economic and social Affairs, Population Division, 2019, p.5

²³ <https://www.worldometers.info/about/>, Woldometer

Although the world population growth rate continues to grow, it has slowed down by half, dropping below 1.1 percent per year in 2015-2020 on average. Projections forecast a constant decrease throughout the end of the century. The highest growing rate has been reached between 1965 and 1970 with an increasing of 2.1 percent per year. According to the medium projection, the population is likely to reach 8.5 billion inhabitants in 2030, 9.7 billion in 2050 and 10.9 billion in 2100. According to this variant, a decline in fertility is expected in countries where large families prevail, the fertility level of countries where women have less than two children should slightly increase and the mortality level at all ages will decrease. Trend projections of the population size at the regional and global level are done through a broad and exhaustive set of demographic data but a plausible uncertainty still remains concerning many aspects: future trends in fertility, mortality and migration data.²⁴ The prospect concludes that “with a certainty of 95 percent”, in 2030, the global population size that could be expected will fluctuate “between 8.5 and 8.6 billion in 2030, between 9.4 and 10.1 billion in 2050, and between 9.4 and 12.7 billion in 2100”.²⁵

²⁴ *How certain are the United Nations global population projections?*, Population Facts, United Nations, Population Division, Department of Social and Economic Affairs, No. 2019/6, December 2019

²⁵ *World population prospects 2019: Highlights*, United Nations, Department of economic and social Affairs, Population Division, 2019, p.5

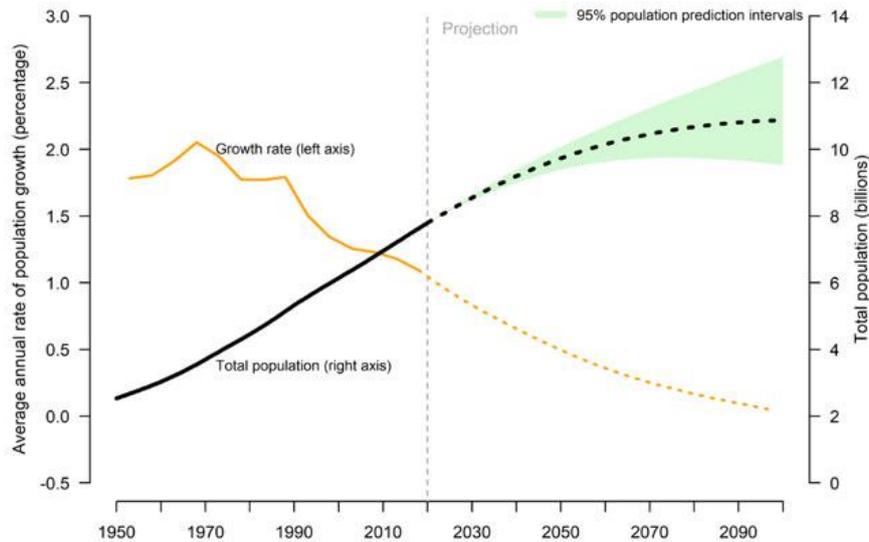


Figure 4. The graph shows the total population (black line) and the annual growth rate (orange line). The graph shows the estimates of the growth rate and of the total population between 1950 and 2020 according to the medium variant projection. Moreover, the 95 percent prediction intervals between 2020 and 2100 are presented in light green.²⁶

Over the coming years, Africa is expected to become the country that accounts for the majority of world's population growth, whereas many other countries will be experiencing a decrease in population numbers. Countries that are part of the sub-Saharan Africa will account for 52 percent of the global population growth between 2019 and 2050, therefore 1.050 billion people. Central and Southern Asia will account for 25 percent, therefore 505 million people. Around 2062, sub-Saharan Africa is expected to become the most populous of the eight SDG regions²⁷. In 2019, Eastern and South-Eastern Asia have been the two most populous regions in the world, accounting for 2.3 billion people, therefore 30 percent of the global population. After 1950, those two regions underwent a rapid increase in population and they will reach the peak in population during the next decades, with around 2.4 billion inhabitants around 2038. On the other hand, European and Northern America population stabilised, with 1.11 billion during 2019, and is expected to have a very slow growth, reaching 1.14 billion towards

²⁶ *World Population Prospects 2019*, United Nations, Department of Economic and Social Affairs, Population Division, 2019

²⁷ <https://unstats.un.org/sdgs/indicators/regional-groups/>, *The Sustainable Development Goals Reports*,

2042. In Latin America and in the Caribbean, where from 1950 to 2019 the population has tripled, it is expected to reach the 768 million inhabitants around 2058 and then to experience a decline to 680 million in 2100. The last region taken into consideration by the UN Prospects is Oceania, in which the population will continue to grow and to reach an increase up to 12 million in 2019 to 26 million in 2100.

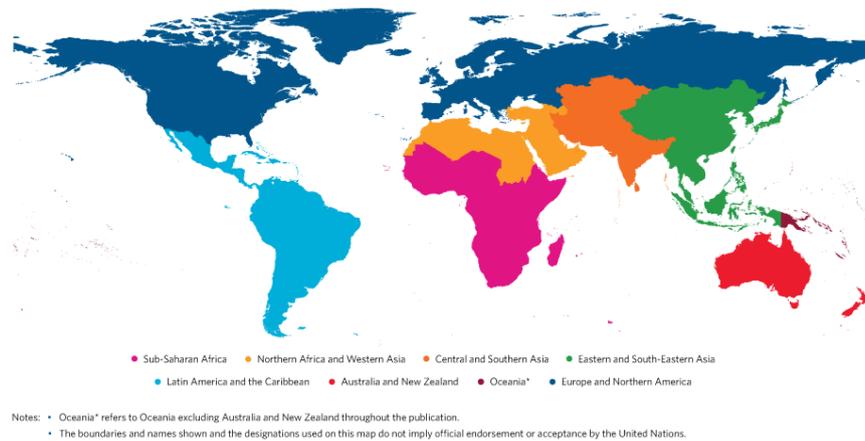


Figure 5. The image shows the SGD Regions represented with different colours. Country groupings are based on the geographic regions that have been defined under the Standard Country or Area Codes for Statistical Use (M49)²⁸ of the United Nations Statistic Division.²⁹

²⁸ <https://unstats.un.org/unsd/methodology/m49>, Standard country or area codes for statistical use (M49), Statistic Division, United Nations

²⁹ <https://unstats.un.org/sdgs/report/2019/regional-groups/>, Regional Groupings, The Sustainable Development Goals Report 2019, Department of Economic and Social Affairs, Statistic Division, United Nations

Of the eight SDG regions, only sub-Saharan Africa is projected to sustain rapid population growth through the end of the century, according to the medium-variant projection

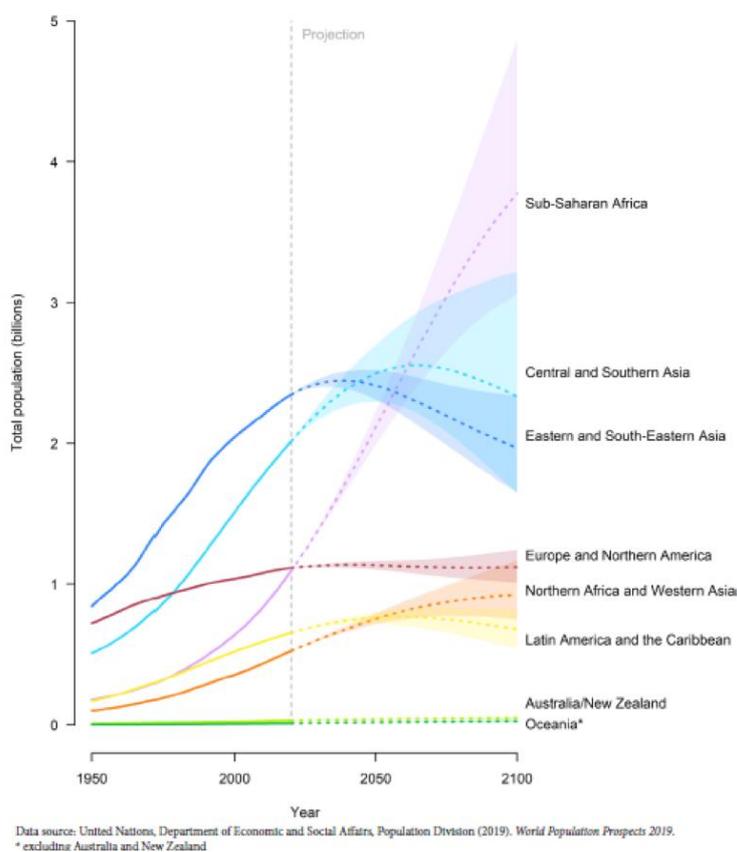


Figure 6. *Population by SDG Region.* The image shows the estimates of total population growth (in billions) between 1950 and 2020, and the medium-variant projection with 95 percent prediction intervals in the period 2020-2100. According to the graph, sub-Saharan Africa will be the region that will sustain the highest rate of population growth.³⁰

The ONU projections have been made upon the annual growth rate, the percentage of population growth per year. A population that presents a stationary growth rate will follow an endless exponential growth. On the other hand, with a negative growing rate, the population will decrease in numbers. Figure 7 presents the population growth rate since 1950 until 2050 according to the UN projections. When the growth rate is positive, the population grows, when its negative, it decreases. In this projection the growth rate is 0.5 percent per year, and it takes into account the age structure of all the countries and the tendencies that have been recorded about women’s fertility rate.

³⁰ *World Population Prospects 2019: Highlights*, Department of Economic and Social Affairs, Population Division, United Nations, 2019, p.7

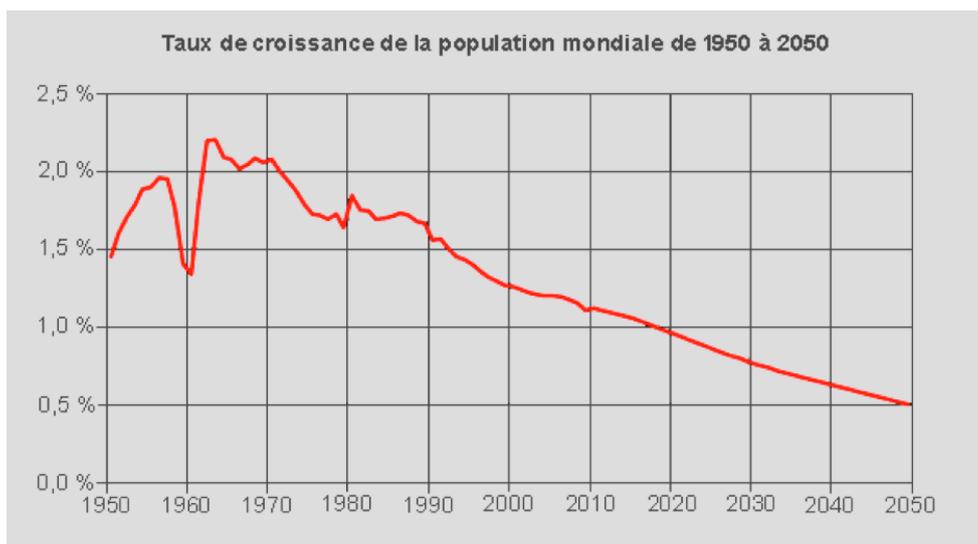


Figure 7. *Determined population growth rate and its extrapolation until 2050.*³¹

1.5 Europe

Europe is the third most populous continent of the world after the Asian and the African ones. According to the platform Worldometer based on the latest United Nations estimations, on February 2020 the European population accounted for 747 million inhabitants.³² A common feature among all the European states has been the reduction in the fertility level under the replacement level. At the beginning of the 20th century, the European continent has been the one with the highest proportion of elderly people on the total population. Between the years 2000 and 2050, Europe will experience the lowest decrease in the share of the young (0-14 years old) due to the already low percentage of youth at the beginning of the 21st century and the reduction in fertility of the other continents. During the last four decades of the 20th century, the average fertility level constantly decreased in Europe and in almost all the other Organisation for Economic Cooperation and Development's (OECD) developed member countries.

³¹ <https://www.captaineconomics.fr/-transition-demographique-et-vieillissement-de-la-population>, Transition démographique et vieillissement de la population, 01/01/2012

³² <https://www.worldometers.info/world-population/europe-population/>, Europe Population (LIVE), Worldometer, 2020

Since 1990-1995, the total fertility rate (TFR) is less than 1.6 children per woman. This decrease in fertility is attributable to changes in the preferences of couples: smaller families, higher investments on their children's future and work needs for both parents³³. According to Eurostat data regarding the population growth rate, since 1960 until January 2019, the European population increased from 406,7 to 513,58 million inhabitants, 1.1 million more than the previous year. The annual growth rate has progressively decreased going from 3.3 million persons during the 1960s to 1.4 million during the period 2005-19.³⁴

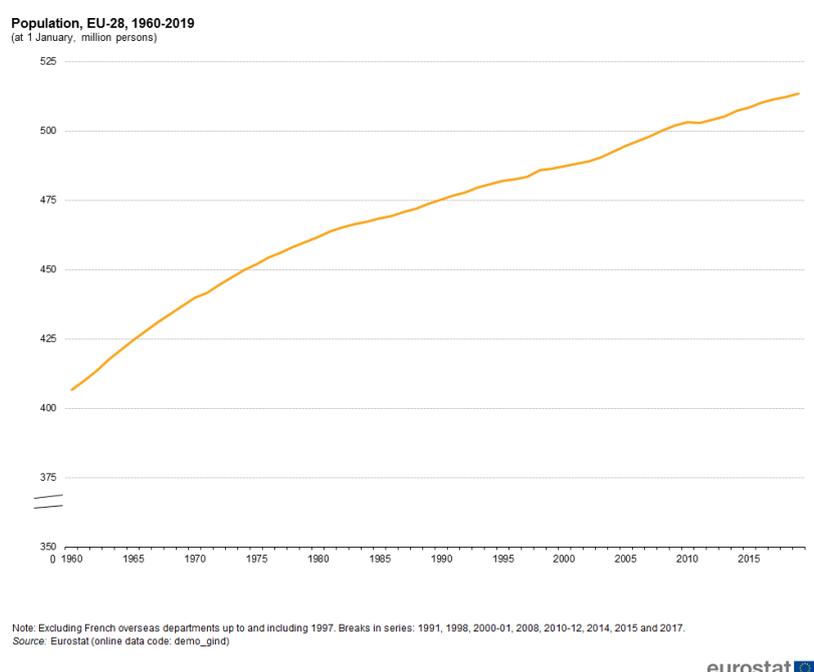


Figure 8. The graph shows the European population growth fluctuations between 1960 and 2019 according to Eurostat data. Data consider the United Kingdom and exclude French overseas departments.³⁵

³³ BONGAARTS, J., The end of fertility transition in the developed world, *Population and Development Review*, in *Population and Development Review*, Vol. 28, No. 3, pp. 419-443, September 2002

³⁴ https://ec.europa.eu/eurostat/statisticsexplained/index.php/Population_and_population_change_statistics#EU-28_population_continues_to_grow, *EU-28 population continues to grow, Population and Population change statistics*, Eurostat, Statistics Explained, Data extracted in July 2019, Article update: July 2020

³⁵ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population,_EU-28,_1960-2019_\(at_1_January,_million_persons\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population,_EU-28,_1960-2019_(at_1_January,_million_persons).png), *Population, EU-28, 1960-2019 (at 1 January, million persons)*, Eurostat Statistics Explained, 8 July 2019

The decrease in fertility rate and the postponement of births that shaped the end of the 1960s and the beginning of the 1970s in Northern and Western Europe are part of broader changes that shaped many aspects of life, both individual and collective. There has been a transformation of the rules, of the values and of the attitudes concerning the family life and the maternity. The postponement of the maternity, the increase in divorces and in the number of children born outside of marriage and the consequent disconnection between marriage and procreation are notably common features that prevailed. Those processes of change that affect both the demographic behaviours and the family formation models can be identified as Second Demographic Transition^{36 37}. What characterises the family life in this second demographic transition is the reason why couples decide to have children. The parenthood ceases to be seen as a duty towards the society and becomes a planned choice within the life of a couple. Anyway, demographic behaviours are not unified around Europe since differences may be observed between northern and southern countries. Northern European countries have been the first experiencing an early and fast decrease followed by a rate recovery and the maintenance of a relatively high fertility rate: 1.85 children per woman during the 1970s. Since the mid-1970s, southern countries have experienced a slower and more gradual decline, reaching the average of 1.3 children per woman in 1994.

1.6 The Former Soviet countries

Since the collapse of the Soviet Union, there has been a demographic stagnation in the territory that continued until 2010. According to the United Nations estimations of 2019, the former Soviet Union accounts for 293.5 million inhabitants. Projections expect to experience an increase: 298 million inhabitants in 2050. Since 1960, there has been a decline in the birth rate with the maintenance of a rate above the replacement level. A common feature of those countries is the implementation of pronatalist policies. In the socialist European countries, social policy measures (families support, labour market

³⁶ ZAIDI, B. and MORGAN, S.P., *The Second Demographic Transition Theory: A Review and Appraisal*, in *Annual review of sociology*, Vol. 43, pp. 473-492, Department of Sociology, University of North Carolina, May 19, 2017

³⁷ VAN DE KAA, D.J., *Europe's second demographic transition*, in *Population Bulletin*, Vol. 42, pp.1-59, February 1987

policies) have been implemented since the mid '60s in order to ensure a high level of birth rate. In the former Czechoslovakia, Hungary, Romania, Bulgaria and in many other countries active policies have been adopted such as the policies restricting abortion like the Decree 770 in Romania and the policies providing family allowances in Czechoslovakia or aid for working women in Hungary.³⁸

During the 25th Congress of the Communist Party of the Soviet Union, it was presented the need to elaborate an efficient demographic policy due to the insufficient birth rate experienced during the 1970s. During the 26th Congress in 1981, many points had been highlighted in order to create a comprehensive social policy with the goal of increasing the birth rate: financial and material assistance to young married couples and to families with children, improvement in the living and housing conditions, improvement in the access and in the quality of pre-school facilities and many others. Those measures were firstly implemented in regions with a low level of fertility. This stable and risk-free framework, with a high level of familism also defined as socialist greenhouse ³⁹, prevented the family-related changes that took place in Northern and Western Europe since de mid 1960s from happening. Those measures had positive results on the short-term. Differently, an inversion of the trend with a consequent decrease in births was experienced after the dissolution of the Soviet Bloc. After 1991, the republics born after the dissolution of the Soviet Bloc showed a general decrease in the total fertility rate. Russia has been the first country experiencing a level of fertility below the replacement level. After 2007, through the implementation of new social policies the fertility level raised at 1.6 children per woman in 2011. Nowadays, Russia presents one of the highest fertility rates in Europe, 1.75 children per woman, even though it still remains under the replacement level.

³⁸ BODROVA, V., *Demographic policy-analysis and prospects: Experience in Demographic Policy in the Field of Fertility in European Socialist Countries*, in *International Population Conference*, Florence, Vol. 3, pp.391-402, June 1985

³⁹ SOBOTKA, T., *Ten years of rapid fertility changes in the European post-communist countries*, Population Research Centre Working Paper, University of Groningen, p.1-86, 2002

1.7 The Mediterranean area

Between the northern bank of the Mediterranean and the south-eastern one, there are many differences with regards to the population. The former already reached the post-transactional step of the fertility and mortality level. In the latter, there are some countries that are still in an intermediate stage. In this phase, the mortality level is similar to the one of the northern countries and the fecundity remains at a medium-high level, with only some exceptions. Nowadays, countries in the south-eastern Mediterranean bank are gradually converging toward the demographic models of the northern bank. The fertility rate is decreasing, and life expectancy is increasing. The population is rapidly increasing due to the combination of the rapid decrease of the mortality rate and the high rate of population in reproductive age. Within the countries of the south-eastern bank, there are many differences for what concern the fertility level. The fertility model in Egypt has been stable for three years as reported by the survey *Egypt Demographic and Health Survey* carried on in 2014, and it corresponds to 3.5 children per woman.⁴⁰ In 2008, it was 3.0 children per woman. In Jordan, before 2002, the fertility level decreased during 15 years whereas now it remains stable at 3.5 children per woman.⁴¹

Two special cases are represented by Israel and Palestine. The Palestinian population accounts for 4.8 million people, with an annual growth of 2.4 percent, 1/3 more than the Israeli one. The average age is young, half of the population is aged between 0 and 18. During the '60s, the fertility level decreased at a maximum of 8 children per woman, and nowadays it is around more than 5 per woman. The level of education is high especially regarding the education of women: 56 percent of the university students are women.⁴² The Palestinian population is mainly divided into two different ethnic groups: Jews (17 percent) and Arabs (83 percent). In 1948, the Palestinian population accounted for 806.000 inhabitants and since then the population increased by 11 times, especially

⁴⁰ <https://www.unicef.org/egypt/reports/egypt-demographic-and-health-survey-2014>, *Egypt Demographic and Health Survey 2014*, Ministry of Health and Population Cairo, Egypt and The DHS Program, Unicef, May 2015

⁴¹ *Population and Families Health Survey 2017-18*, The Hashemite Kingdom of Jordan, The DHS Program, Department of Statistics (DOS) and ICF Amman, Jordan, Rockville, Maryland, USA, March 2019

⁴² <https://www.un.org/unispal/document/auto-insert-180574/>, *Situation of and assistance to Palestinian women: Report of the Secretary General*, Commission on the Status of Women (CSW), Economic and Social Council (ECOSOC), Secretary-General, United Nations, March 10, 2014

due to the Jewish immigration from other countries. Nowadays, the Israeli population accounts for 8.655 million people and the main factor is the high population fertility: women have on average 3 children that is a high rate for the European standard and for the standard of an industrialised country. This level of fecundity is atypical for industrialised and developed countries like Israel and Palestine, with low levels of infant and maternal mortality and a high life expectancy (on average 82 years for both sexes)⁴³, a high degree of income (69 percent of the population aged 15 to 64 in Israel has a paid job) and education (87 percent of people aged 25-64 have completed the upper secondary education).⁴⁴ The reason why the fecundity level is so atypical for Palestine and Israel is the fact that within those countries there is a constant difference and contrast between the Jewish and the Arab populations. Consequently, the Israeli families maintain a birth rate that is higher than the replacement level. The actual rate at which the population is expanding is 1.55 percent, and it is expected to increase by 13 million by 2050.⁴⁵ Within the Jewish Israeli population, there is a group of ultra-orthodox Jews (on average 10 percent of the population) that have an extremely high rate of fertility: 7 children per woman. This factor contributes to an expansion of the young population, which is expected to represent 30 percent of the total population by the year 2050.⁴⁶ Therefore, the high fecundity rate of the Arabs affects the fecundity rate of the Jewish especially in Palestine.⁴⁷

1.8 Asia: the cases of India and China

In 2020, according to the latest data of the United Nations elaborated by Worldometer, the population of China accounts for 1.437 billion people.⁴⁸ India, the

⁴³ https://www.indexmundi.com/it/israele/speranza_di_vita_alla_nascita.html, *Israele Speranza di vita alla nascita*, Index Mundi, 31/03/2017

⁴⁴ www.oecdbetterlifeindex.org/countries/israel/, Better Life Index, Israel

⁴⁵ worldpopulationreview.com/countries/israel-population/, 2020 World Population by Country, World Population Review, 2020

⁴⁶ ANGELI, A. and SALVINI, S., *Popolazione mondiale e sviluppo sostenibile*, Il Mulino edizioni, July 2018

⁴⁷ <https://www.jewishdatabank.org/databank/search-results/study/803>, *2015 World Jewish Population*, Berman Jewish Databank, 2015

⁴⁸ <https://www.worldometers.info/world-population/china-population/>, China Population, Wordometer, 24 February 2020

second most populous country in the world after China, accounts for 1.375 billion people.⁴⁹ The fertility rate in India is higher than the replacement level and it is 2.240 children per woman in 2018⁵⁰, whereas in China it is 1.62 children per woman.⁵¹ Both in China and in India, there has been a gradual decrease in the birth rate. In China, it is partially a consequence of the family planning policies that have been put in place since 1979. It is also an indirect consequence of the increasing economic well-being of the population and of the increasing female's education and instruction, and consequently the feminine empowerment. The growth of the female participation in the labour market, the cost of the children due to the increase in the education level, the longer life expectancy of the new born, especially due to the lower infant mortality, and many other factors related to the development of these countries are the main factors that influenced the reduction of the birth rate, despite the application of family planning policies.

The decrease of birth rates in India started during the 1970s and it has been a relatively slow process. This slowness in the decrease of the birth rates produced a late Indian demographic transition, if compared to China. According to the prospects published by the United Nations, India is expected to surpass China around 2027 by adding nearly 273 million people between 2019 and 2050. This means that India has a total growth rate of 1.1 percent per year. Differently, the Chinese population remains rather stationary, with a growth rate on average of 0.6 percent per year. Nowadays, the Indian total fertility rate is on average 2.4 children per woman, while in China it is 1.6. The projections show that the total fertility rate of India is expected to gradually decrease until stabilising and reaching the replacement level in 2035. The problems related to the access to contraceptive methods and the unsatisfied need of Indian women of contraception is evident. Data collected over the years show great discrepancies between the number of desired children and the progeny (higher).⁵² Probably, this situation could have been prevented if family planning policies implemented by the Indian government

⁴⁹ <https://www.worldometers.info/world-population/india-population/>, India Population, Worldometer, 24 February 2020

⁵⁰ <https://www.macrotrends.net/countries/IND/india/fertility-rate>, India Fertility Rate 1950-2020, Macrotrend

⁵¹ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=CN>, Fertility rate, total (births per woman, China, The World Bank Group

⁵² BONGAARTS, J. and JOHANSSON, E., *Future trends in contraceptive prevalence a method mix in the developing world*, *Studies in Family Planning*, Vol.33, No. 1, pp 24-36, December 2003

in 1976 weren't mainly focused on the sterilisation, especially on tubectomy. Vice versa, implementing policies mainly focused on raising awareness among the population toward alternative contraceptive measures such as the pill, would have produced a better knowledge toward family planning measures together with an increase in the implementation of such measures. Nowadays, 42.6 percent of women in reproductive age (15-49 years old) have access to any contraceptive method: tubectomy remains among the prevailing methods of birth control (29 percent) and women still struggle to have access to other family planning measures. Chinese women can freely accede to any contraceptive measure since the family planning service is an integral part of the family planning policy implemented since 1979.⁵³

Both in developed and developing countries, more educated women tend to have less children as instruction can affect in many ways the cultural context and life of women. The impact is not direct but education and empowerment produce a restructuring of the relationships and of the economies within the family.⁵⁴ Educated women can increase their health as mothers and consequently can better take care of their children. Therefore, child mortality decreases and there is a lower need to beget many children. The level of instruction can also affect the consciousness and the knowledge of women regarding contraception therefore helping to practice birth control. Moreover, instructed women can be more easily included within the decisional process of families. In developing countries, family planning policies should be complementary to feminine instruction policies as there is a real impact on the use of contraceptives and on women empowerment through a greater education. In the Indian and Chinese framework, it is important to take into consideration both the family planning policies implemented by the government and the indirect role of women's instruction and their consequent participation in the labour market in order to talk about demographic transition.

A different situation is the case of Iran. Actually, in Iran the birth rate is 1.66 children per woman⁵⁵, which is below the overall level of the Islamic countries and of the

⁵³ *Contraceptive Use by Method 2019: Data Booklet*, United Nations, Department of Economic and Social Affairs, Population Division, 2019

⁵⁴ CALDWELL, J. C., *Mass Education as a Determinant of the Timing of Fertility Decline*, Population and Development Review, Vol. 6, No. 2, pp. 225-255, Jun. 1980

⁵⁵ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=IR>, *Fertility rate, total (births per woman) - Iran, Islamic Republic*, The world Bank, 2017

global fertility rate that is 2.5 children per woman. The fertility rate started decreasing at the end of the 1980s when the government decided to put in place a family planning program and a reproductive health program in order to raise awareness among the population. In addition to the introduction of these programs, the factor that influenced the most the decrease in the fertility rate has been the increasing degree of female's instruction.⁵⁶

1.9 Latin America and the Caribbean

The population in Latin America and in the Caribbean accounts for 651.981 million people according the last United Nation estimates. The population is forecasted to increase at 706 billion people in 2030 and 762 billion in 2050.⁵⁷ The countries that make up this broad area present many differences in the demographic, cultural and socio-economical point of view. The total fertility rate decreased relatively fast passing from 5.9 children per woman in the 1960s to 2.05 children per woman today.⁵⁸ The countries that between 2010 and 2015 reached an advanced level in the demographic transition are many: Brazil, Columbia, Bahamas and Cuba.⁵⁹ The birth rate is relatively high only in a limited number of countries: Bolivia (2.8), Guatemala (2.9) and Haiti (3)⁶⁰. During the last decade, the economic and financial crisis affected the fertility rate of those countries decreasing or postponing the pregnancy. This particularly affected women with higher levels of education living in urban areas.⁶¹

⁵⁶ ERFAINI, A. and MCQUILLNAN, K., *Rapid fertility decline in Iran: Analysis of intermediate variable*, Journal of Biosocial Sciences, Vol. 40, No. 3, pp. 459-478, Population Studies Centre, Department of Sociology, University of Western Ontario, Cambridge University Press, June 2008

⁵⁷ <https://www.worldometers.info/world-population/latin-america-and-the-caribbean-population/>, Latin America and the Caribbean Population (LIVE), Worldometer, February 27 2020

⁵⁸ <https://tradingeconomics.com/latin-america-and-caribbean/fertility-rate-total-births-per-woman-wb-data.html>, Latin America & Caribbean (developing Only) - Fertility Rate, Total (births Per Woman), February 2020

⁵⁹ *World Population Prospects 2019: Highlights*, Department of Economic and Social Affairs, Population Division, United Nations, 2019

⁶⁰ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ZJ>, Fertility rate, total (births per woman) - Latin America & Caribbean, 2020

⁶¹ ADSERA, A. and MELENDEZ, A., *Fertility changes in Latin America in the context of economic uncertainty*, Population Studies (Camb), Vol. 65, No. 1, pp. 37-56, March 2011

A feature that characterises those countries is the maternity at a young age. The rate of adolescent fertility of these countries is only second to the African one. Differently from the total fertility level that continues decreasing harmoniously in all the countries of Latin America and the Caribbean, the fertility level in young age is different from country to country and has no relation with the total fertility level. The increase of this type of fertility is present in countries with different levels of economic development, instruction and poverty level. Since it is constantly increasing in many countries, it contributes more and more to the overall level of fertility. In Central and South America, the countries where rising trends in adolescent fertility have been observed are Guatemala, Nicaragua and Panama. For what concern the Caribbean the countries with the highest rates of teen fertility are the Dominican Republic and Guyana.⁶² This phenomenon is particularly present especially in rural areas where on average 30 percent of the indigenous teenager had a child. In this area too, the non-indigenous percentage of girls is around 15 percent.⁶³

In this area of the world, discrimination against women still exists and they are more likely to live in poverty. However, the process of urbanization and the increasing participation of women in the paid labour workforce produced therefore the decrease of the fertility level but it was not enough to increase the age at which women have their first child. The teen fertility rate is one of the key problems of this area that must be taken into consideration by the international community and discussed at the political level.

1.10 The African continent

In sub-Saharan Africa the demographic transition began later than in other continents and progressed more slowly, sometimes with periods of stalemate. Due to the extremely high fertility level (on average 4.8 children per woman⁶⁴) and the decrease of

⁶² https://www.paho.org/hq/index.php?option=com_content&view=article&id=14163:latin-america-and-the-caribbean-have-the-second-highest-adolescent-pregnancy-rates-in-the-world&Itemid=1926&lang=en, *Latin America and the Caribbean have the second highest adolescent pregnancy rates in the world*, Pan American Health Organization (PAHO), World Health Organization, February 2018

⁶³ NEIL, S. and HARVEY, C. *et al.*, *Trends in adolescent first births in five countries in Latin America and the Caribbean: disaggregated data from demographic and health surveys*, in *Reproductive Health*, Vol. 15, No. 146, July 2018

⁶⁴ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ZG>, Fertility rate, total (births per woman) - Sub-Saharan Africa, 2020

the mortality rate, the African population is growing by 2.5 percent per year. Nowadays, Africa accounts for 1.340 billion people and according to the United Nation Prospects in 2050 it will account for 2.489 billion inhabitants. This unprecedented growth will generate a series of social, economic and environmental challenges for the human population. In general terms, the demography of the African territory can be divided into three main groups: in the north there is a relatively low fertility rate, with 2.8 children per woman;⁶⁵ the south, like the north, already experienced a first demographic transition and presents an average rate of fertility of 2.4 children per woman; finally, the sub-Saharan Africa still presents an incredible high rate of births with 4.8 children per woman and an high mortality rate, especially the infant one.⁶⁶

Taking into consideration the sub-Saharan Africa, the population that compose this part of the continent is extremely young: almost 70 percent of the population is aged less than 30 years and they are more instructed than their parents. Since 1990-1995, the fertility rate passed from 6.2 children per woman to 5 births per woman in 2010-2015. The demographic transition experienced by the sub-Saharan Africa is extremely slow if compared to other parts of the world such as Latin America and Asia. One of the leading factors of the African demographic change has been the female empowerment. As reported by the Global Gender Gap Index 2020, Rwanda is placed at the 9th place of the global ranking especially thanks to the high participation of women to the political life and their large presence at the parliament. After Rwanda, there are Namibia, South Africa and Burundi, respectively at the 12th, 17th and 32nd places due to the political empowerment, economic participation and equality in the opportunities offered to women.⁶⁷ Other important factors that influence the female emancipation are the laws regarding child marriage. During the last two decades, the average age for marriage increased in almost all African countries and nowadays the average age for women at first marriage is 25. This phenomenon reflects the increase in the level of education, the increase in the level of economic independence and a later entry in the labour force. Therefore, in the south of the continent women still marry at a young age, on average 21

⁶⁵ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ZQ>, Fertility rate, total (births per woman) - Middle East & North Africa, 2017

⁶⁶ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ZG>, Fertility rate, total (births per woman) - Sub-Saharan Africa, 2017

⁶⁷ *Global Gender Gap Report 2020*, World Economic Forum, Switzerland, December 2019, pp.10-13

while men marry at 26. The problem of child marriage still remains among the greater violations of human right in Africa. Child marriage limits the possibilities of girls to receive an adequate education, equal opportunities and produces lasting consequences on girl's health and development.⁶⁸ However, this practice is slowly declining passing from 31 percent in 1995 to 26 percent in 2010. In the Middle East and in North Africa, the percentage of women that married before 18 decreased by half, passing from 34 percent to 18 percent over the last 30 years. For what concerns South Asia, marriages involving girls aged of 15 particularly decreased going from 32 percent to 17 percent.⁶⁹ Thanks to the increase in education, the nuptiality happens less early and the fertility level decreases. As presented by the DHS program, in Ghana, women with no education have two times more children (on average 5.5 per woman) than women with more than secondary education (on average 2.7 per woman). Moreover, the economic status influences the number of births per woman, women living in the poorest households have an average of 5.7 children compared to 2.8 children among the wealthiest households.⁷⁰

Among all the African regions, sub-Saharan Africa is the one that presents the highest rate of exclusion from education. More than 1 on 5 children aged between 6 and 11 do not attend school. According to the Institute for Statistics (UIS), UNESCO, almost 60 percent of teens aged 15-17 do not attend school and in the sub-Saharan region on average 9 million girls aged 6-11 will never attend school compared to 6 million boys.⁷¹ Women's instruction produces a greater impact on the age of marriage and on the postponement of fertility toward a more mature age than men's instruction. The fertility level only decreases if both men's and women's education levels grow together. The gender disparity that is present in the educational system in the sub-Saharan region should decrease in order to produce tangible effects on the average fertility rate.

⁶⁸ https://unstats.un.org/unsd/gender/downloads/Ch1_Population_info.pdf, *Population and Families*, The World's Women 2015, pp. 1-25, United Nations Statistics Division, 2015

⁶⁹ *Ending child marriage: Progress and Prospects*, United Nations Children's Fund UNICEF, Data and Analytics Section, Division of Policy and Research, New York, 2014

⁷⁰ *Maternal Health Survey 2017*, Ghana Statistical Service (GSS), and ICF, The DHS Program, August 2018

⁷¹ uis.unesco.org/en/topic/gender-equality-education, *Gender Equality in Education*, UNESCO Institute of Statistics, 2020

An example of achievement of a greater development is represented by South Africa. Even being a quite young population, it is growing older as the total fertility rate dramatically reduced, passing from 6 children per woman during the 1960s to 2.2 children in 2014. As the educational level of women is increasing, the number of children per woman decreases as more instructed women have a higher participation in the paid work force and employ family planning methods. Moreover, the age for marriage is increasing (on average 25) and couples desire smaller families. South Africa is placed in the 17th place of the Global Gender Gap Index of 2020 produced by the World Economic Forum. Anyway, even after having reached a greater gender equality, South Africa still has to face many gender inequalities for what concern the labour force. For example, women with higher education earn 82 percent less than man with the same working position.⁷²

⁷² *Global Gender Gap Report 2020*, World Economic Forum, Switzerland, December 2019, pp.8-11

II - Population growth and environmental degradation

The problem of overpopulation should be considered a central topic to be discussed in the international political debate. The international community committed itself during many years to cope with the phenomenon of sustainable development, for example through the creation of the Sustainable Development Goals (SDGs) in 2015 and intended to be achieved in 2030. *Our Common Future (1987)*, also known as the Brundtland Report defines the sustainable development as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. According to the Brundtland Report, environmental issues and development issues must be addressed together since poverty and international inequality are the main triggers of global environmental degradation. Development is tightly connected with the environment as development cannot exist if the environmental resources are running out. Moreover, environment cannot be protected from human impact if the population growth does not take into consideration the vital importance of environment. The growth rate of the population is a key factor for the next generation’s well-being and the international community has to take it into consideration if it wants to ensure the possibility for the next generations to exploit the natural resources in a sustainable way.⁷³ The United Nations addressed the population growth problem and the problems of economic and social development intrinsically connected to it, thought the drowning-up of the Sustainable Development Goals (SDG’s), set in 2015 and ratified by 193 countries. The study *Global sustainable development priorities 500 y after Luther: Sola schola et sanitate* in *Proceedings of the national Academy of Sciences* made by Wolfgang Lutz shows that if some of those objectives will be achieved, namely the objectives concerning the reproductive health sphere and women’s education, within 2030 it will produce tangible effects on the future growth trends giving a boost to the decrease of the population growth rate. According to Wolfgang Lutz, the population will continue to increase until reaching its peak in 2060 and will become stable near 2100 with on average 8.2 or 8.7 billion people according to the objectives that have been reached.

⁷³ *Report of the World Commission on Environment and Development: Our Common Future*, World Commission on Environment and Development (WCED), Oxford University Press, 1987

The report underlines that the population growth is strictly determined and affected by the policies applied by governments that can effectively reduce the fertility rate.⁷⁴

The economic growth based on the steady production growth and encouraged by consumerism will produce an environmental and ecological collapse over the years. As underlined by R. Grossman in *The world in which the next 4 billion people will live*, the human progress will cause and will be hindered by the constant ecological destruction. According to him, human beings are already overloading the planet. He bases its theories on the notion of *Ecological Footprint*.⁷⁵

2.1 Ecological Footprint

The notion of Ecological Footprint has been originally conceived by Mathis Wackernagel and William Rees in 1990 at the University of British Columbia. The notion of Ecological Footprint can be defined as the tool that makes it possible to evaluate the impact, in terms of resources consumption and collection of waste, of the economic activities of production or individual or collective consumption.⁷⁶ Wackernagel and Rees originally formulated this method by putting into relation the quantity of goods and services produced and consumed by a country with the portion of land that is necessary to grant the availability of the natural resources essential to produce such goods and services and to dispose of the waste collected. The Ecological Footprint of one country will be given by the surface of land necessary to provide the raw materials and the energy (biological capacity) necessary to produce the services and goods consumed as well as that necessary to absorb the waste deriving therefrom, especially carbon emissions. In other words, the Ecological Footprint measures the required ecological assets by a given population in order to produce the natural resources that a given population consumes and to absorb the waste. The Ecological Footprint and the notion of biological capacity are

⁷⁴LUTZ, W. *Global Sustainable Development priorities 500 y after Luther: Sola schola et sanitate*, Proceedings of the National Academy of Science (PNAS), Vol. 114, No. 27, pp. 6904-6913, May 23, 2017

⁷⁵ www.niussp.org/article/the-world-in-which-the-next-4-billion-people-will-live/, GROSSMAN, R., *The World in which the next 4 billion people will live*, N-IUSSUP.ORG, November 13, 2017

⁷⁶ <https://www.footprintnetwork.org/our-work/ecological-footprint/>, *Ecological Footprint*, Global Footprint Network, Advancing the Science of Sustainability

both expressed in global hectares. The *ecological deficit* is the result of an excessive population's Ecological Footprint over the region's biocapacity.⁷⁷ The demand for goods and services of a done population exceeds the capacity of the portion of land to provide these raw materials and the energy necessary to satisfy that demand. When a country experiences an ecological deficit, it meets its needs by importing, selling its own ecological assets and emitting carbon dioxide into the atmosphere. On the opposite, when the region's biocapacity exceeds the Ecological Footprint, there is an *ecological reserve*.⁷⁸ The Ecological Footprint of and individual is the number of hectares that are necessary to produce everything that he consumes and all the waste that he produces.

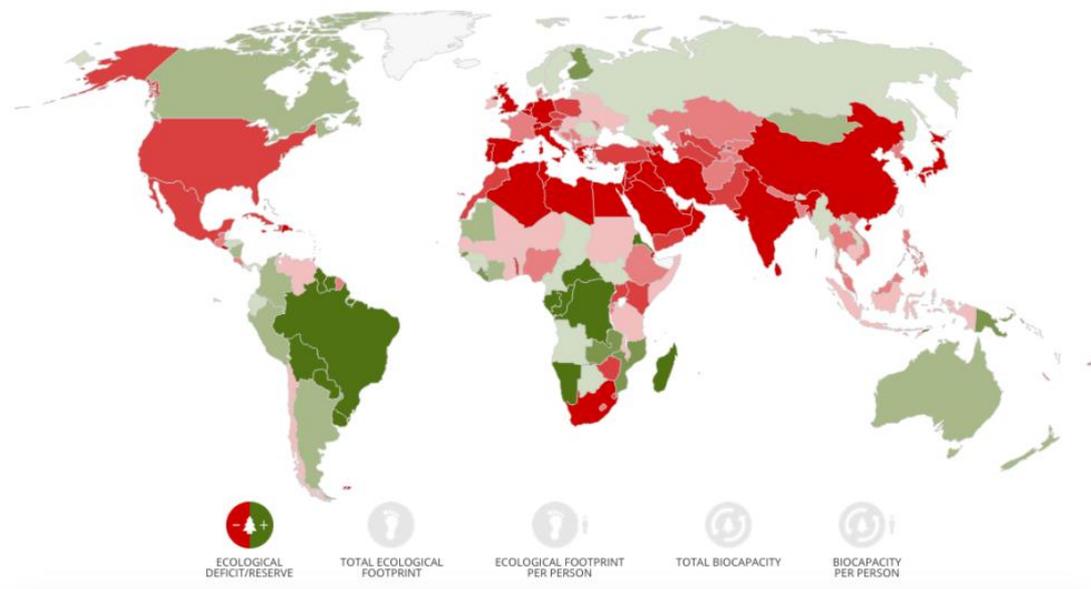


Figure 9. This map shows in red the countries in ecological deficit and in green the countries in ecological reserve around the world.⁷⁹

According to the Global Footprint Network, since the 1970s, humanity has been in global *ecological overshoot* every year.⁸⁰ This means that population started to be in

⁷⁷ <https://www.footprintnetwork.org/our-work/ecological-footprint/>, *Ecological Footprint*, Global Footprint Network, Advancing the Science of Sustainability

⁷⁸ D'AMATO, A., *Impronta Ecologica*, Dizionario di Economia e Finanza, Enciclopedia Treccani, 2012

⁷⁹ https://data.footprintnetwork.org/?__hstc=207509324.089d6f8c83e1efb8fc55fa0a30c5c6ec.1584026628861.1584026628861.1584026628861.1&__hssc=207509324.1.1584026628861&__hsfp=3246291100#/, Global Footprint Network, Advancing the Science of Sustainability

⁸⁰ <https://recyclenation.com/green-glossary/ecological-overshoot/>, *Ecological Overshoot*, Recycle Nation

ecological deficit. The annual demand for resources has exceeded what the Earth can produce per year. At the present time, the annual global demand and the waste collected every year could only be supported by 1.75 planets Earth. Nowadays, the Earth need one year and eight months to regenerate the resources exploited by the population in a year.

Population growth and consumption habits put the biocapacity of Earth under pressure. As showed in figure 9, many countries around the world are already running ecological deficits overexploiting ecosystems within their borders. The projections show that continuing on a business-as-usual path, the global demand for raw materials and energy will reach the equivalent of 2.5 planets Earth by 2050.⁸¹

2.2 The case of the Horn of Africa

Ecological overshoots may severely affect entire ecosystems such as in the case of the Horn of Africa. The international community should keep the situation experienced by this region as an example to remind that the more the environment is exploited and degraded, the more land use patterns become unsustainable. The population in the Horn of Africa (Ethiopia, Eritrea, Sudan, Djibouti, Somalia, Kenya and Uganda) started increasing very quickly when the major disease affecting the region, smallpox, was eliminated. Many human activities contributed to the deterioration of this region's environment and the rapid population growth that occurred since the early 1960s worsened the situation. Since 1960, the population of this broad area increased from an estimated 53 million people and reached 218 million inhabitants in 2010. Nowadays, all countries that compose the Horn of Africa together account for an average of 266 million people. The average growth level between the countries that compose the Horn of Africa is 5.3 according to 2017 estimations.⁸² This growth in the population number led to changes in the rate, extent and intensity of land use. In order to feed everyone, farmers needed extra areas of land to the detriment of forests and of pasture lands. The increasing number of pastoral communities and the decrease of pasture lands increased the pressure

⁸¹GALLI, A., LIN, D., WACKERNAGEL, M. *et al*, *Brief for GSDR 2015: Humanity's growing Ecological Footprint: sustainable development implications*, Global Footprint Network 2015

⁸² <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2003rank.html>, Country Comparison: GDP - Real Growth Rate, The World Factbook, Central Intelligence Agency, 2017

on the regional land and on the need for water, consequently further increasing land degradation. Moreover, the augmentation of the population worldwide and the consequent increase in the demand for food, energy and for raw materials, such as wood, led to an intensified need for fertile soils and irrigated land by the international community. Clearing of land, deforestation for construction and firewood, expansion of extractive industries and commercial farming contributed both directly and indirectly to environmental degradation. Even if on the brief period deforestation may positively impact the life of the African population enhancing economic and infrastructural development, on the long term the negative consequences of the cutting of wood and of forest degradation became visible. The massive clearing of broad areas of forest had devastating effects on ecosystems and greatly affected biological diversity. Deforestation affected the microclimates of the region and altered the rainfall patterns and the humidity level. The infiltration capacity of the soil started to lack as there were no more tree roots. This led to an accelerate loss of topsoil and reduced the biodiversity. Together with deforestation and forest degradation, the problem of land degradation threatens the region causing a loss in the ability of the land to produce raw materials or energy. Soil erosion, soil acidification, desiccation and desertification are only some of the human-induced changes that the region experienced. The consequences that the African population had to face are many. The growing population and longer water shortages are producing economic disruptions both in the peasant and pastoral contexts. Food and water insecurity are closely related phenomenon that were already pre-existing and that the incredible population growth and the human-induced changes on the area worsened. Among the most serious consequences, the population experienced famines and food insecurity that even caused communal conflicts. Rains became more erratic and droughts became more frequent and lasting, the population suffered periodic famines, malnutrition and livestock starvation became an everyday problem. When rains come, they are torrential and contribute to massive soil erosion. This combination of droughts and short torrential rains,

forced Cape Horn inhabitants to experience a decline in their agricultural productivity and quality of pastures, making their life even more precarious.^{83 84}

2.3 Anthropic production and atmospheric CO₂ augmentation

By burning coal, oil and gas humans produce water gas and carbon dioxide. The carbon dioxide production is deleterious on three different levels: the ocean acidification, the increase of the greenhouse effect and, as a consequence, the increase of the surface temperature and the sea-level rise. As explained by Jean Poitou, Pascale Braconnot and Valérie Masson-Delmotte in *Le Climat: la Terre et les Hommes*, through the analysis of air bubbles contained in ice cores in the Antarctic and in Greenland, scientists identified the medium level of CO₂ during the pre-industrial era at 278 ppm. In order to better calculate the concentration of carbon dioxide in the atmosphere, in 1958 the Mauna Loa Observatory (MLO) has been built in Mauna Loa, on the island of Hawaii. Since 1958, Mauna Loa Observatory has been collecting data's and monitoring the level of the CO₂, usually referred to as the Keeling Curve from the name of Charles David Keeling, who firstly started the monitoring program.

⁸³ <https://www.twn.my/title2/resurgence/2011/251-252/cover02.htm>, MENGISTEAB, K., *Environmental degradation in the Greater Horn of Africa: Some impacts and future implications*, *Horn of Africa and Peace: The Role of the Environment*, Third World Resurgence, No.251/252, pp.8-12, Third World Network (TWN), July/August 2011

⁸⁴ VAN DE GIESSEN, E., *Horn of Africa: Environmental Security Assessment*, Project Coordinator East Africa, Programme on Environmental Security for Poverty Alleviation, Institute for Environmental Security, The Netherlands, January 2011

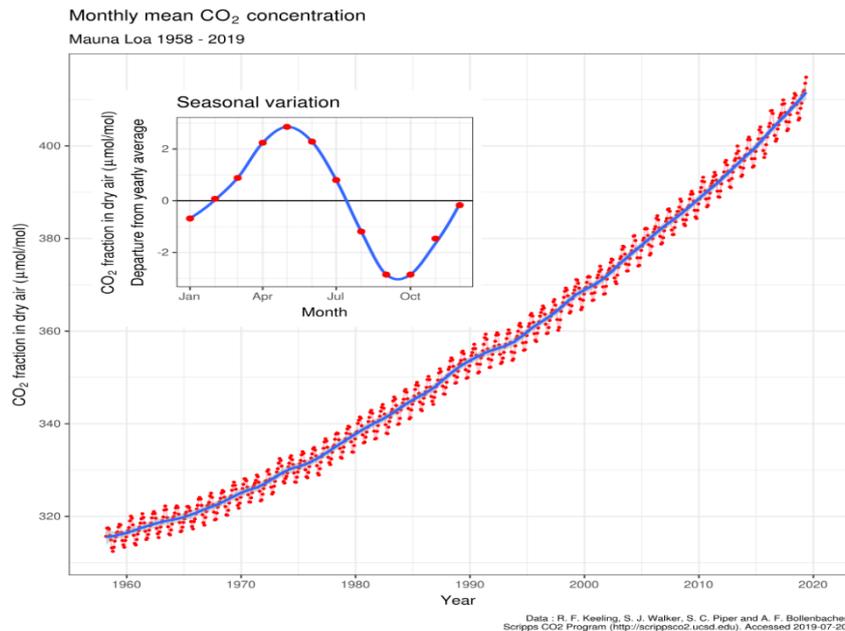


Figure 8. *The Keeling Curve. The graph shows the concentration of atmospheric carbon dioxide in dry air measured at Mauna Loa Observatory, Hawaii, since 1958 until 2019. The graph also presents the seasonal variation of the CO₂ concentration in dry air.*⁸⁵

Scientists have been able to calculate the quantity of carbon dioxide on the atmosphere, in terms of “mixing ratio”. The “mixing ratio” of a gas X represents the proportion of moles of X per mole of air. As showed by Figure 8, in 1958 the ratio of carbon dioxide per mole of air corresponded to 315 ppm (parts per million), 350 ppm in 1988 and 401 ppm in April 2014. From December 2018 until December 2019, the concentration of CO₂ in the atmosphere passed from 409,07 ppm to 411,76 ppm.⁸⁶

⁸⁵ <https://scrippsc02.ucsd.edu>, *Scripps CO₂ Sampling Stations*, Scripps CO₂ Program, Carbon Dioxide Measurements, National Oceanographic and Atmospheric Administration (NOAA), National Science Foundation (NSF)

⁸⁶ <https://www.esrl.noaa.gov/gmd/ccgg/trends/>, *Monthly Average Mauna Loa CO₂*, Trends in Atmospheric Carbon Dioxide, Global Monitoring Laboratory, Earth System Research Laboratories, Global Monitoring Division

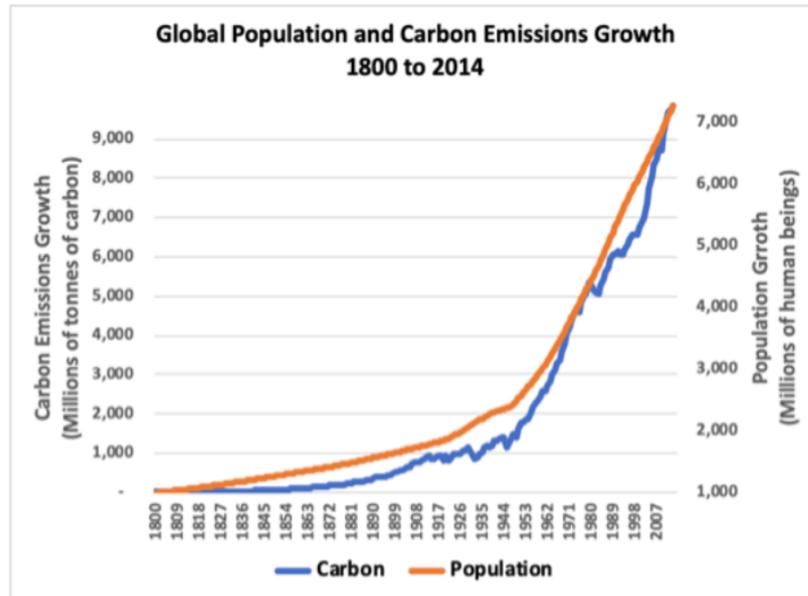


Figure 9. Global carbon dioxide emissions and global population increase together. Data are taken from CAIT Climate Data Explorer. The graph presents the CO₂ emissions growth (blue line) and the global population growth (orange line).^{87 88}

Comparing the increase in the global carbon dioxide emissions (blue line) and the global population growth (orange line), it is easy to notice that they increase simultaneously. With the increase in the population, there is an increase in carbon dioxide emissions and as seen through the Keeling curve, its concentration increases too.

2.4 Carbon cycle and anthropic production

Carbon is fundamental for human life, for our sustenance and for the functioning of our society (our means of transport and homes). Carbon is the fourth most plentiful element in the Universe. The vast majority of Earth's carbon is accumulated in rocks and it accounts for about 65.500 billion of metric tons. The rest is stored in other reservoirs:

⁸⁷https://www.realclearenergy.org/articles/2019/08/30/confessions_of_an_anthropogenic_global_warming_fatalist.html, PETERSON, J., *Confessions of an Anthropogenic Global Warming Fatalist*, Real Clear Energy, August 3, 2019

⁸⁸ <http://cait.wri.org/>, CAIT Climate Data Explorer

atmosphere, ocean, soil, plants and fossil fuels. During the carbon cycle, there is a continuous exchange of carbon between those reservoirs and it is made up of slow and fast components. Carbon flows from one reservoir to the others and when carbon gases are put into the atmosphere, the consequence is the increase in Earth temperatures. In the long run, there is a balance in the carbon cycle that prevents all the carbon present on Earth from flowing into the atmosphere or from being entirely stored in rocks. Thanks to this balance, the Earth's temperature remains relatively stable. This balance in temperatures is the consequence of the slow carbon cycle, meanwhile over shorter time periods (from tens to a hundred thousand years) the temperature of Earth can fluctuate.

Through the slow carbon cycle moves on average 10¹³ to 10¹⁴ grams of carbon between reservoirs per year whereas with the fast carbon cycle there is an exchange of carbon from 10¹⁶ to 10¹ grams every year.⁸⁹

2.5 The slow carbon cycle

In the slow carbon cycle, carbon takes on average 100-200 million years to move between all the reservoirs. Through the rain, carbon moves from the atmosphere to the lithosphere as combining with water, carbon forms a weak acid that falls to the surface in rain. This acid dissolves rocks and releases magnesium, calcium, potassium and sodium ions that are eventually carried to the ocean by rivers. In the ocean, bicarbonate ions combine with those calcium ions and form calcium carbonate. Nowadays, 80 percent of the calcium carbonate in the ocean is the result of the death of organisms such as shells, corals and plankton that after their death sink to the sea floor and over years turn into carbon-containing rocks. The remaining 20 percent of calcium carbonate is contained in living organisms embedded in layers of mud that over millions of years form sedimentary rocks like shale. When tectonic plates collide one moves under another and rock melts under the extreme pressure. Rocks are heated and recombine into silicate minerals, releasing carbon dioxide. Volcanoes return carbon to the atmosphere by erupting. They release gas to the atmosphere and cover the ground with silicate rock. Volcanoes emit about 130 to

⁸⁹http://earthguide.ucsd.edu/virtualmuseum/climatechange1/05_2.shtml, *The Earth's Carbon Reservoirs*, Climate Change, Earth's Climate System, University of California, San Diego, 2002

380 million of metric tons of carbon dioxide per years whereas humans emit roughly 39 billion tons of carbon dioxide per year by burning fossil fuels. Yet, there is a faster phenomenon that makes up the slow carbon cycle. At the surface of the ocean, carbon dioxide gas dissolves out of the ocean in the atmosphere whereas, in the ocean, carbon dioxide releases hydrogen by reacting with water. This makes ocean more acidic. Before the Industrial Age, the carbon dioxide released and received by the ocean were in a state of balance. After the increase in the concentration of carbon in the atmosphere, the quantity of carbon received by the ocean increased too. As a consequence, up to 85 percent of the extra carbon released by the population into the atmosphere will be absorbed by the ocean.⁹⁰

2.6 The fast carbon cycle

The fast carbon cycle represents the movement of carbon through life forms on Earth. It has a crucial role in biology as it has the ability to form many bonds in a limitless variety of complex organic molecules. Carbon atoms contained in organic molecules combine and create strong bonds with other carbon atoms, in such a way to create long chains and rings. Those carbon chains and rings are the foundation of living cells. As carbon chains contain a lot of energy, when they are broken this energy is released and it represents an excellent source of fuel. The main components of the carbon cycle are phytoplankton and plants that absorb the carbon dioxide present in the atmosphere. Through the energy released by the sun, plankton and plants combine carbon dioxide (CO₂) and water (H₂O) to form sugar (CH₂O) and oxygen (O₂):



Four processes can happen: plants break down the sugar in order to have the energy to grow; animals and people eat the plankton or the plants and break down sugar to have energy; plants and plankton die or fire consumes plants and water, carbon dioxide and energy are released. In each case, carbon dioxide is released in the atmosphere.⁹¹

⁹⁰ <https://earthobservatory.nasa.gov/features/CarbonCycle>, RIEBEEK, H., *The Carbon Cycle*, NASA Earth Observatory, June 16, 2011

⁹¹ MCKINLEY, G.A., *Carbon and Climate*, University of Wisconsin Madison, May 4, 2011

2.7 Changes in the carbon cycle

Over the long term, the slow carbon cycle and the fast carbon cycle maintain a constant concentration of carbon in the different reservoirs. On the contrary, if the amount of carbon in one reservoir changes due to perturbations, it will cause a domino effect on the other reservoirs too. Climate change has been the main factor that caused variations in the carbon cycle. The level of carbon dioxide in the atmosphere has a close connection with Earth's temperature. When variations in the orbit of the Earth occur, the amount of energy received by the Earth from the Sun varies. This variation leads to the alternation of ice ages and warm periods like the climate that we are currently experiencing.⁹² At the present time, perturbations of the carbon cycle are mainly caused due to the burning of fossil fuels and large-scale logging. By clearing forest, humans cut down plants that accumulated carbon and remove wood, stems and leaves that could take carbon from the atmosphere and store it. Tropical rainforests such as those in Brazil, Indonesia and Zaire, are under particular spotlight since they are being destroyed at a dramatically high speed in order to meet the demand of a growing population for firewood and food. In the place of forests, humans plant crops or use the land for pasture. Such activities store less carbon, therefore soil releases carbon from decayed plant material into the atmosphere. Human activity of deforestation has a long-lasting impact on the environment and since the end of the 19th century, it has significantly increased the concentration of carbon dioxide in the atmosphere. The IPCC estimates that humans are currently emitting about 1.6 billion tonnes of carbon per year through the conversion of forest into agricultural land.⁹³ Without human interference, the atmosphere would receive carbon from the fossil fuels only in millions of years through the volcanic activity in the slow carbon cycle. Coal, oil and natural gas release vast amounts of carbon in a short period of time when burnt. This accelerates the process of the slow carbon cycle and turns it into the fast one. In 2019, the combustion of fossil fuels emitted almost 36.8 billion tonnes of carbon dioxide, 0.6 percent higher than in 2018.⁹⁴

⁹² HANSEN, J., RUEDY, R., SATO, M. *et al.*, *Global Surface temperature change*, in *Reviews of Geophysics*, No.48, December 14, 2010

⁹³ *Rapport Spécial du GIEC: Utilisation des terres, changements d'affectation des terres et foresterie*, Groupe d'experts intergouvernemental sur l'évolution du climat, 2000

⁹⁴ FRIEDLINGSTEIN, P. *et al.*, *Global Carbon Budget 2019*, Global Carbon Project, Earth System Science Data (ESSD), Vol. 11, No. 4, pp. 1783-1838, December 4, 2019

2.8 Effects of variations in the Carbon Cycle

Changes in the carbon cycle influence all the reservoirs that are part of the cycle by emitting significant quantities of carbon in the atmosphere. Until now, 55 percent of the extra carbon has been taken by land plants and ocean, while 45 percent remained in the atmosphere.

2.8.1 Atmosphere

Carbon dioxide together with the other greenhouse gases, methane and halocarbons, are important for controlling Earth's temperature as they absorb a broad variety of energy and re-emit it. A part of this re-emitted energy returns to the Earth's surface and heats it. Through the maintenance of a fixed concentration of greenhouse gases Earth's temperature stays stable. Through the identification of which wavelengths of energy are absorbed by each greenhouse gas and their concentration in the atmosphere, scientists calculated the contribution of each gas to warming Earth's temperature. Carbon dioxide accounts for 20 percent of Earth's greenhouse effect, 50 percent is caused by water vapour, and 25 percent is caused by clouds. The remaining portion is caused by minor greenhouse gases. The variation of Earth's temperature controls the concentration of water vapour in the air: warmer temperatures produce a higher humidity and cooler temperatures lead water vapour to condense and fall out as rain, sleet or snow. Differently from water vapour, carbon dioxide maintains its gaseous state at a broader variety of atmospheric temperatures. Scientists have found that even if carbon dioxide contributes less to the overall greenhouse effect than water vapour, it sets the temperature and consequently the quantity of water vapour that exists in the atmosphere and the size of the greenhouse effect. The molecules of carbon dioxide supply the greenhouse heating necessary to keep stable the concentration of water vapour. When there is a decrease in carbon dioxide, Earth's temperature gets cooler, water vapour drops off the atmosphere and greenhouse warming due to water vapour decreases. Similarly, if the concentration of carbon dioxide increases, temperature gets warmer, water vapour evaporates and consequently the heating due to greenhouse effect rises. Until now, average global

temperatures have risen 0.85 degrees Celsius (1.5 degrees Fahrenheit) above the 20th century average.⁹⁵

2.8.2 Ocean

An estimated 30 to 40 percent of the total carbon dioxide produced by the population flows from the atmosphere to the ocean through the direct chemical exchange. Carbon acid is created through the dissolution of carbon dioxide in the ocean, consequently the acidity of water increases. Since the pre-industrial era, ocean acidity changed by 28.8 percent with a drop in pH by 0.11.⁹⁶ Excessive urbanization causes the phenomenon of eutrophication that occurs when carbon dioxide and other greenhouse gases and pollutants are produced by huge urban areas and are dissolved in water resources, consequently increasing the pollution of water and leading to an overgrowth of plants and algae in aquatic ecosystems. Another effect caused by the excessive CO₂ anthropic production, like eutrophication, is the acidification of ocean. It bears two main effects on marine organisms. The first one is that shelled animals will have less carbonate ions to create calcium carbonate shells as carbonic acid and carbonate ions react in water and form bicarbonate. The decrease in the quantity of carbonate in water causes an increase in the energy expended by those shelled animals to build their shells. The final output will be frailer and thinner shells. The second consequence is the fact that a more acidic water will increase the quantity in calcium carbonate that is dissolved. Eventually, ocean will absorb the excess in carbon as more acidic water will dissolve more rock and consequently release more carbonate ions. This will increase the capability of ocean to soak up carbon. Moreover, the quantity of phytoplankton in the ocean will decrease due to the warmer temperatures. Consequently, the quantity of carbon absorbed by the ocean from the atmosphere through the fast carbon cycle will decrease.⁹⁷

⁹⁵ LACIS, A.A., SCHMIDT, G.A., RIND, D., and RUEDY, R.A., *Atmospheric CO₂: Principal control governing Earth's temperature*, Science, No. 330, Issue 6002, 356-359, October 15, 2010

⁹⁶ <https://en.unesco.org/ocean-acidification>, *Ocean acidification*, United Nations Educational, Scientific and Cultural Organization (UNESCO), 2019

⁹⁷ SCHAFFER, K., SODING, E. and ZELLER, M., *Living with the oceans. A report on the state of the world's oceans*, in *World Ocean Review 1*, pp.28-53, 2010

2.8.3 Land

The capacity of world plants to absorb carbon dioxide in the atmosphere has increased since 1900 and this partially is a direct consequence of the increase in fossil fuel emissions. Nowadays, approximately 25 percent of the carbon in the atmosphere is taken up by plants. By absorbing higher quantities of carbon, plants increased their growth but eventually plant growth is limited by the amount of water and nitrogen available. However, due to climate change, carbon dioxide increases temperatures and consequently plants need more water to survive during the warmer growing season. Plants become more susceptible to fire and insects and there is an increase in fires that release carbon into the atmosphere.⁹⁸ Moreover, the warming temperatures heat up the soil causing an increase in the carbon that flows out from the soil. The higher concern is for northern countries where the permafrost is defrosting. Owing to the albedo effect, more of the radiation from the Sun are returned to space and the temperature of the planet cools. Due to the increase in temperatures, broad areas covered by snow are getting warmer. Consequently, the snow melts and the temperature of the soil increase. The rich deposits of organic matter accumulated over thousands of years under the permafrost are slowly decaying in the form of methane and carbon dioxide due to warmer temperatures. As a result, methane and carbon flow out in the atmosphere.⁹⁹

2.8.4 Sea level rise

There are two main factors related to global warming that influence the level of sea: the high temperatures result in the melting of ice sheets and glaciers, especially in the Antarctic and in Greenland. This phenomenon account for one third of the global sea level rise. And the second factor is the thermic expansion of water when it warms. Between 1993 and 2018, it accounted for 42 percent of the global sea level rise. The *Special Report on the Ocean and Cryosphere in a Changing Climate* (SROCC) has been approved by the United Nations Intergovernmental Panel on Climate Change (IPCC) in

⁹⁸ <https://earthobservatory.nasa.gov/features/CarbonCycle>, *The Carbon Cycle*, NASA Earth Observatory, Holli Riebeek, June 16, 2011

⁹⁹ SCHUUR, E.A.G., BOCKHEIM, J., CANADELL, J.G. *et al*, *Vulnerability of permafrost carbon to climate change: Implications for the global carbon cycle*, *BioScience*, Vol. 58, No. 8, pp. 701-714, September 2008

September 2019, in Monaco. As presented by the Report, the Global Mean Sea Level (GMSL), between 1900 and 2016, rose by 16 and 21 cm. There has been an acceleration of this phenomenon of 7.5 cm from 1993 to 2017. This rate is expected to further accelerate during the 21st century rising by 9 to 18 cm by 2030, 15 to 38 cm by 2050 and reaching 30 to 130 cm by 2100^{100 101}. Projections made by the IPCC are given in terms of GMSL, this means that sea levels around the world can vary depending on many factors such as the gravitational pull on the ice in Antarctica and Greenland. Moreover, sea level rise will also respond to the future scenarios of human- caused emissions of greenhouse gases. An average, a 30 percent of variation in a specific location has been calculated from the GMSL. Figure 10 shows six different possible sea level rise scenarios that were elaborated by the U.S Federal Interagency Sea Level Rise Taskforce.

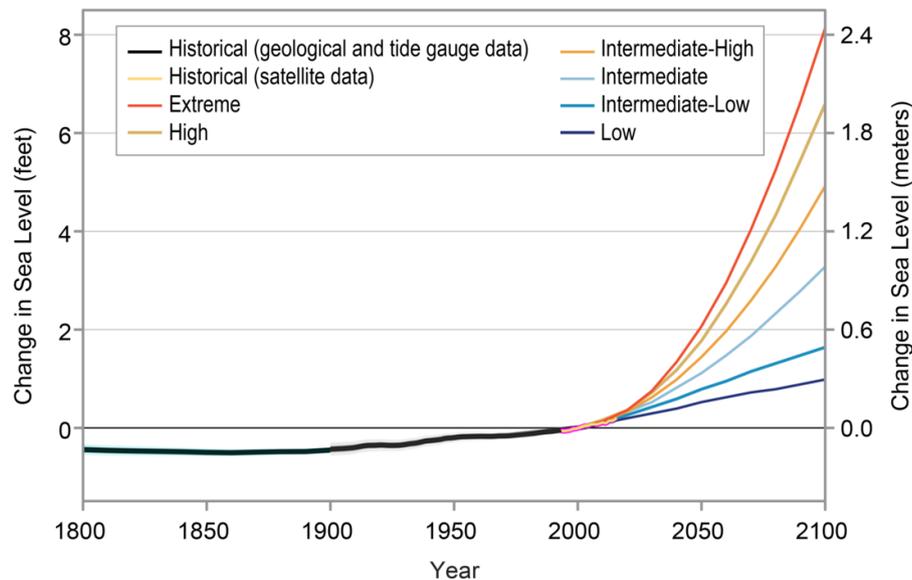


Figure 10. Sea level rise in meters and in feet according to the 5th IPCC report and to the Fourth National Climate Assessment. The six coloured lines show the different scenarios of global sea level rise, relative to the year 2000, developed by the U.S Federal Interagency Sea Level Rise Taskforce by 2100.¹⁰²

¹⁰¹ PORTNER, H.O., ROBERTS, D.C., MASSON-DELMOTTE, V. *et al*, *Special Report: Special Report on the Ocean and Cryosphere in a Changing Climate. Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities*, IPCC, September 2019

¹⁰² REDMILLER, D.R., AVERY, D.R., EASTERLING, K.E. *et al*, *Impacts, Risks and Adaptation in the United States: Fourth National Climate Assessment Climate*, Vol. 2, p. 85, U.S Global Change Research Program, U.S. Government Publishing Office, Washington, DC, USA, 2018

The main consequences of the sea level rise will include intense storms, tidal flooding and any other form of flooding regarding the low-lying coastal areas that will increase their frequency. Nowadays, an average of 200 million people live less than 5 metres above the sea on the coastline and by the 21st century scientists predicted that it will increase around 400 to 500 million.

III - Population control and family planning programs

During the 1950s, an increase in the fertility rate and a decrease in the mortality rate together with an increase in life expectancy led to a rapid population growth in almost all developed countries around the world. The perception of this unprecedented growth rate and the well-founded fear of an unsustainable population blow-up led governments to implement a series of population control policies and programs. Firstly, the concern for population growth touched the intellectual elites in countries such as the United States, Sweden and some developing countries especially India. Both governmental and nongovernmental organisations, private foundations and other actors advocated to implement policies with the aim of reducing the overall level of fertility rate. Moreover, since the end of World War II, substantial social and economic gains took place in developing countries in several areas: the average level of schooling, urbanization, literacy, nutrition and the average household incomes increased. Electronic devices such as televisions and radio and mass communication print media became more diffused among the population increasing the spread of information and messages. At the same time, the decrease of infant mortality and the increase in life expectancy led to a natural decrease in fertility. The higher level of education, the change in attitudes and the awareness-rising of human rights and of feminine empowerment both led to an increase of the age of marriage and to a broader adoption of means to limit the size of families. Intrinsically connected, the development of modern and safer contraceptive methods and their increased availability played a central role in fertility decline.

India has been the first country to adopt a population control policy in 1951, followed by Pakistan, the Republic of Korea, China and Fiji. Only during the late 1960s and early 1970s, other developing countries decided to implement national policies addressing demographic concerns. In 1954, the United Nations held the first World Population Conference that played a major role toward awareness rising among countries about the need of a population policy. Thereafter, only the 1974 World Population Conference held in Bucharest produced effective changes within the international community through the drowning up of the *World Population Plan of Action*. It aimed at providing recommendations targeting the development of population policies by creating

global population goals and the implementation of socioeconomic policies.¹⁰³ In 1964, 40 countries that accounted for 58 percent of the world's population put in place policies aiming at reducing or stabilising the fertility rate. Thereafter, 179 countries enacted policies and programs in order to implement a more comprehensive and articulate family planning approach by 1996. By 1998, out of 193 countries, 80 implemented policies to decrease the average level of fertility, whereas 23 countries sought to raise fertility.¹⁰⁴ Currently two-third of developing countries implement national population policies or programs. Those policies played a central role in reducing the fertility rate in the countries in which were applied. As will be analysed throughout the chapter, the population control policies mainly focus on two factors: educating the population about contraceptive methods and making them available to the overall population, and making public campaigns aimed at promoting a smaller and wealthier model of family.

The application of these programs had effective results on the reduction of the fertility rate across countries. The worldwide fertility rate declined from over 5 births per women during the 1960s to an average of 2.4 children per woman in 2020.¹⁰⁵ This decline in fertility rate was experienced in many regions. Between 1960 and 2019, fertility rate in East Asia and the Pacific fell from 5.4 to 1.8¹⁰⁶; in Latin America and in the Caribbean, it decreased from 5.98 to 2¹⁰⁷; in the Middle East and North Africa decreased from 6.87 to 2.8¹⁰⁸. The application of different population-control policies caused different evolutions in fertility but, in the end, countries converge to very similar fertility rates. Anyway, even after the worldwide reduction in fertility rates, the problem of population growth still remains a worldwide challenge that must be addressed by the international community in order to reach a global replacement level of fertility and a balance in the population number. Throughout the analysis of different family planning programs and

¹⁰³ RICHARDS, J.H., *World Population Year 1974*, Vol. 8, No. 7, pp. 208-207, Intereconomics, Hamburg, 1973

¹⁰⁴ https://esa.un.org/PopPolicy/wpp_datasets.aspx, World Population Policies, Datasets 1976-2015, United Nations, Department of Economic and Social Affairs, Population Division, 2020

¹⁰⁵ <https://worldpopulationreview.com/countries/total-fertility-rate/>, Total Fertility Rate 2020, World Population Review

¹⁰⁶ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=Z4>, Fertility rate, total (births per woman) - East Asia & Pacific, The World Bank Data

¹⁰⁷ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ZJ>, Fertility rate, total (births per woman) - Latin America & Caribbean, The World Bank Data

¹⁰⁸ <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=ZQ>, Fertility rate (births per woman) - Middle East & North Africa

the study of their effects on countries' fertility rate it is possible to find out the strengths and the weaknesses of such programs and identify variables that should be brought into particularly sharp focus of the international community.

3.1 The application of Family Planning Programs and their evolution

A population program aims at implementing nationally defined policies that want to affect demographic trends and patterns. It can both encompass the legislative and regulatory governmental mechanism to directly influence the reproductive behaviours of the population or can address the morality and the family image to indirectly affect the fertility rate. Family planning programs have been described by George Simmons (1986) as:

“[...] organised efforts to assure that couples who want to limit their family size and space their children have access to contraceptive information and services and are encouraged to use them as need”¹⁰⁹.

Organised efforts can both be applied at the nominal and at the extensive level. The nominal level represents the specific and restricted level of action like in the case of the Ministry of Health division supervising the distribution of healthcare to mothers and children and family planning services or the action of nongovernmental organization such as family planning associations. The extensive level represents the broad governmental actions coordinated by a national panel like in the case of the National Family Planning Coordinating Board in Indonesia. Countries that implement both extensive and nominal efforts, and that additionally present non-profit and nongovernmental organisations that offer family planning services, are perceived as countries employing a strong national effort. On the contrary, when a country healthcare system does not provide contraceptive methods or where the family planning services are promoted only at the local level, are considered countries with a weak national effort. Lapham and Mauldin (1985) have been

¹⁰⁹ SIMMONS, G., *Family planning programs* in MENKEN, J., *World Population and U.S. Policy: The Choices Ahead*, New York, pp. 175-206, 1986

the first that developed a quantitative measure to analyse country's family planning strengths or efforts and dividing them according to a score.¹¹⁰

Since the end of World War II, the population explosion started becoming a central issue for many countries and raised awareness about the necessity of a family planning program. Firstly, in the United States, a population-control movement developed because of the concern for the growing imbalance between population growth and resource growth. Moreover, this movement, led by John D. Rockefeller II and the Ford Foundation, was concerned with the political instability that could have been caused by the population growth in the poorest countries. Thereafter, Rockefeller founded the Population Council in 1952, an international non-profit and nongovernmental organization, with the aim of providing assistance and conducting researches in the public and reproductive health spheres among others for the population programs that were implemented around the globe. Simultaneously, India developed and implemented the first national population program and Margaret Sanger and Lady Rama Rau formed the International Planned Parenthood Federation (IPPF) to promote sexual and reproductive health and to defend the individual right to make the own choice with regard to family planning.¹¹¹ During the late 1950s, the issue of population growth became central in the political debate in the United States. As written in a report of 1959 by a Presidential Committee studying the military assistance program of the United States, there was a particular concern for the rapid population growth of the countries with which the United States were cooperating in economic aid programs and it was suggested to help those countries to formulate more comprehensive and articulated family planning programs.¹¹² In the beginning of the 1960s, many foundations such as the Ford Foundation and the Rockefeller Foundation provided funding in order to develop family planning programs and to carry on researches about the population growth issue. Only during the mid-1960s, the population planning movement started having a prominent role.

¹¹⁰ ROSS, J. and STOVER J., *The Family Planning Program Effort Index: 1999 Cycle*, in *International Family Planning Perspectives*, Vol. 27, Issue 3, pp. 119-129, Guttmacher Institute, 2001

¹¹¹ CLAEYS, V., *Brave and angry: The creation and development of the International Planned Parenthood Federation (IPPF)*, in *The European Journal of Contraception & Reproductive Health Care*, Vol. 15, No. Supp. 2, pp. 67-76, December 2010

¹¹² DRAPER, W.H., *Composite Report of the President's Committee to Study the U.S. Military Assistance Program*, Vol. 1, Government Printing Office, Washington, DC, August 17, 1959

Despite the American concern for the population issue, the Swedish government was the first that carried out the first comprehensive and large-scale family planning program in Sri Lanka, India and Pakistan in 1962. At the same time, the creation of oral contraceptives and the invention of the intra-uterine device (IUD) provided the possibility to have at hand effective contraceptive method available for the population. The East Asian countries immediately experienced effects on population growth since the application of family planning programs, especially South Korea, Singapore, Hong Kong and Thailand. Differently from those Asian countries, other developing countries with different cultural backgrounds, notably the religious one, experienced much more slower results after the family planning programs implementation. The cultural and religious opposition towards birth control methods were the main factors that slowed down the outcome of such programs.

In 1974, the World Population Conference held in Bucharest represented a turning point toward a broader implementation of family planning programs, especially thanks to the drafting of the *World Population Plan of action*. By recognising the intrinsic connection between population growth and economic development, the Plan encouraged nations to develop and apply population policies; allowed full freedom to governments to determine and employ the most appropriate policies within their borders; encouraged countries to make family planning education and services available to individuals in order to arise awareness among the population and to pay close attention to age and sex structure of the population in order to formulate an appropriate development program that especially took into account the legal, educational and working equality for women.¹¹³ According to the data provided by the UN World Population Policy database, in 1976, out of 156 countries, 40 both developed and developing countries across East and South Asia, Latin America and the Caribbean applied explicit policies that aimed at limiting the fertility rate. Differently, far fewer countries in Africa, only 4, implemented fertility reduction policies in 1976. Throughout the 1970s, the African continent was not concerned about the population growth as the size of its population remained quite small. In 1978, 34 out of 48 African countries accounted for less than 5 million people. Only until the 1980s, African governments started to recognise population growth as an issue

¹¹³ *World Population Plan of Action*, United Nations, Bucharest, August 19-30, 1974

to care about. Between the 1970s and 1984, family planning programs started to be supported by both governmental and nongovernmental organization and the number of countries that supported family planning for health reasons nearly quadrupled. By 1998, 30 out of 53 African States implemented explicit national population policies and population control programs.¹¹⁴ In Africa, the concern for demographic growth only became real during the mid-80s, when many African states had to face difficulties with high rates of population growth that were exceeding economic growth causing a slowdown of it and was placing an excessive request on public infrastructures. By 1996, 83 countries around the world, representing 70 percent of the total world's population, implemented family planning policies and since that, the number of countries applying state support for family planning continued to rise regularly.¹¹⁵

3.2 Family Planning Policies and their characteristics

Family planning programs have been key instruments in public health intervention in developing countries aiming at improving three different areas: demographic, health and human rights. The demographic rationale has been the predominant one since the late 1940s and early 1950s until the late 1970s, when the gap between the rapid decline in mortality and the high fertility caused an unprecedented population growth especially in South and East Asian countries. By the 1960s, other countries too in Latin America and in the Middle East started experiencing a similar growth in the population number, with a growth of more than 3 percent annually. According to scientists and economists, this demographic explosion would cause a delay and bear negative consequences on the economic growth and on the improvement of the standards of living of the population. During the 1980s, a shift occurred toward the health rationale. This shift partially occurred also due to political and ideological influences, since the health rationale appeared to be more appealing to policy makers worldwide, especially in sub-Saharan Africa. This rationale focuses on the health consequences that a high fertility level can bear, including

¹¹⁴ *Policies for lower population growth rates in African countries*, in *African Population Development Bulletin*, pp. 9-12, June-July 1999

¹¹⁵ https://esa.un.org/PopPolicy/wpp_datasets.aspx, Datasets 1976-2015, Department of Economic and Social Affairs, Population Division, United Nations

high rates of maternal, infant and child mortality. Moreover, abortion became a central topic in many countries like in Chile where preventing abortion due to unintended pregnancies became a central factor for building birth control clinics.¹¹⁶ Moreover, the fairness in the access of family planning services became a discussed topic within the broader debate on the health rationale. In 1965 in Columbia, for example, the Profamilia, a private family planning association, has been founded in order to give access to healthcare and quality sanitary services also to poorer women who had no possibilities to seek medical treatments otherwise.¹¹⁷ Finally, during the 1990s, the human rights rationale became the prevailing one and it mainly focused on women's rights, notably reproductive rights and women's reproductive health. Family planning started to become linked to human rights after the publication on Human Rights Day in December 1967 of the World Leaders' Declaration on Population signed by 30 head of governments from five continents¹¹⁸. The declaration underlines the fact that the possibility to decide on the number and spacing of their children is a basic human right. Moreover, in 1969, a General Assembly resolution on social progress and development encouraged governments to nationally provide family planning assistance in order to educate and help families with fertility control.

At the beginning, family planning policies that were implemented in most developing countries mainly focused on the supply of contraceptive methods that could take many forms such as oral contraceptives, condoms, abortion and sterilisation (mostly tubectomy). The main objective of these policies was to reduce the so-called *KAP-gap* or the *unmet need* for family planning. The *KAP-gap* is the discrepancy between women's stated preferences for children and their contraceptive use.¹¹⁹ Figure 11 shows the increase in contraceptive prevalence since the beginning of the implementation of family planning programs during the 1960s, until 1990. Over the years, KAP surveys and many other surveys such as for example the World Fertility Surveys (WFS), the Contraceptive

¹¹⁶ ROMERO, H., *Chile: The Abortion Epidemic*, in BERELSON, B., *Population: Challenging World Crisis*, 149-60, Washington DC, Government printing office, 1969

¹¹⁷ SELTZER, J. and GOMEZ, F., *Family planning and population programs in Columbia 1965-1997*, Population Technical Assistance Project (POPTECH), Report No. 97-114-062, May 1998

¹¹⁸ AYALA, T. and CARADON, L., *Declaration on Population: The World Leaders Statement*, in *Studies in Family Planning*, Vol. 1, No. 26, pp. 1-3, Population Council, January 1968

¹¹⁹ BONGAARTS, J., *The Kap-Gap and the Unmet Need for Contraception*, in *Population and Development Review*, Population Council, Vol. 17, No. 2., pp. 293-313, June, 1991

Prevalence Studies (CPS) and other surveys conducted by the Demographic and Health Surveys (DHS) have been carried on on the national large-scale in many countries. Since 1972, those surveys helped national governments to monitor the trend in fertility, in contraception use and in maternal and child health of their countries. Developing countries, for example, used information and data collected by those surveys to establish fertility reducing goals and to implement family planning programs suitable for their scenario. Moreover, surveys helped policy makers to adequately respond and meet the needs of their population. Likewise, governments also used data to see the progresses and the successes of the policies implemented or to develop more appropriate tools. Data collected over years by those surveys showed that in developing regions contraceptive prevalence rose from 14 percent among couples in reproductive age, to 50 percent in 1990. The greater increase in contraceptive methods use has been experienced by East Asian countries that passed from 17 percent to 74 percent. Data also showed an increased level of met demand of contraceptive prevalence in many regions, with the consequent reduction of the KAP-Gap. The only exception is sub-Saharan Africa, where many countries still present a level of contraceptive prevalence below 10 percent in 12 out of 36 countries.

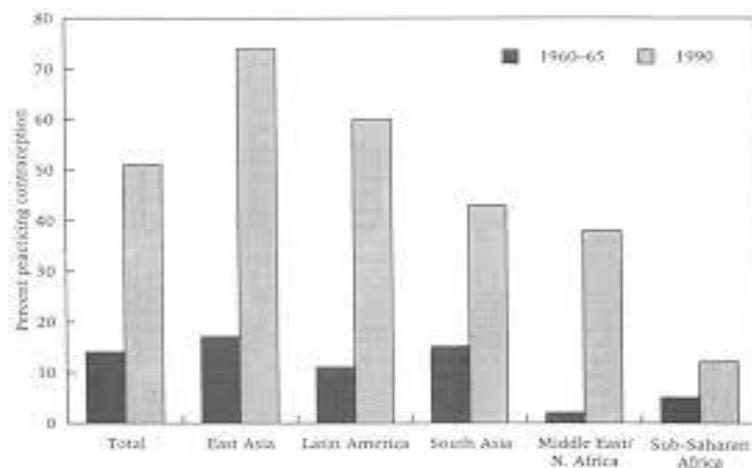


Figure 11. *Contraceptive prevalence in the developing world by region. The figure shows the difference in contraceptive prevalence between 1960-1965 and 1990.*¹²⁰

¹²⁰ ROSS, J. and FRANKENBERG, E., *Findings from Two Decades of Family Planning Research*, Population Council, New York, 1993

According to United Nations estimations, an average of 54 million couples practiced pregnancy avoidance through the use of contraceptive measures during the 1960s. In 2000, the number of couples that employed contraceptive methods increased to an average of 504 million couples.¹²¹ Despite having produced significant results, the supply of those contraceptive methods turned out to be insufficient toward the reduction of the fertility rate to desired levels. This appeared especially clear in rural and poor areas where there was a lack of access to family planning services and healthcare services and this represented the major impediment to employ contraceptive methods. Moreover, it did not produce significant results in more traditional societies where the cultural and religious backgrounds represented a strong opposition towards birth control measures. Consequently, governments focused on assuring a good access to contraceptive methods to women and couples. Good access included that contraceptive should become affordable to everyone and that healthcare and family planning services could be found within a reasonable travelling distance and time. Moreover, it included that women and couples that wanted to employ contraceptive methods developed the knowledge to do so and were informed about family planning measures. A key factor that many governments took into account was the adjustment of public attitudes and the creation of a modern idea of family, smaller and wealthier, through the use of public campaigns and mass-media advertisements like in the case of Brazilian telenovelas.

Many features diversified family planning programs and policies that were implemented across countries such as the price at which contraceptive methods were sold, the role of public and private provisions, the delivery system that provided services and the implementation of mass-media for awareness-raising campaigns.¹²² At the beginning, the majority of the countries that started implementing family planning measures based their interventions on the already existing healthcare system and healthcare infrastructures in order to provide the population with modern contraceptive methods. Moreover, always on a clinic-based approach, the health infrastructures provided consultations to women about contraceptive measures, especially to women that had undergone abortion or had given birth and aimed at educating them. The limit of using

¹²¹ ONG TSUI, A., *Population Policies, Family Planning Programs, and Fertility: The Record*, in *Population and Development Review*, Vol. 27, Supplement: Global Fertility Transition, pp. 191, 2001

¹²² FREEDMAN, R. and BERELSON B., *The Record of Family Planning Programs*, in *Studies in Family Planning*, Vol. 7, No. 1, pp.1-40, Population Council, January 1976

healthcare facilities in order to implement awareness-raising measures was clear especially in countries and in regions, like India and Iran, where a large part of the population did not benefit from the health care system and women did not make use of health infrastructures in order to give birth. Therefore, in order to reach the rural areas too, trained field workers were deployed to make house calls. The first countries that applied more articulated family-planning programs were Iran and Malaysia. Those countries decided to implement their programs at an early stage in order to reach a broader portion of the population and to be more effective and inclusive: family-planning programs were linked to maternal and child health services and infrastructures. Only during the 90s, other countries started following the example of Iran and Malaysia. As already mentioned, during the 1950s and the 1960s, the major part of family-planning programs that were implemented were only focusing on providing contraceptive measures, instead of raising awareness among the population. This led, in many cases, to a systematic fail of these measures and the goal of reducing the fertility rate was not achieved. This notably happened in countries where the population was mainly made up of Catholics and Muslims. Therefore, countries became aware that it was necessary to change the attitude of the population toward the willingness to use contraceptives and toward the number of desired children since facilitating the access and increasing the quantity of the provided contraceptives was not enough. What had to change were the cultural habits and the traditional image of family. Moreover, the use of contraceptives and the easy access to them was compatible with a high fertility rate if the number of desired children was high.¹²³ In order to overcome this problem, many countries implemented population-control policies adapted to the religious and cultural characteristics of their population. In Indonesia for example, the government published the pamphlet *Views of Religions of Family Planning* in which described the general acceptance on the use of contraceptive by four Indonesian's five official religions (Islam, Hinduism, Protestant and Catholic Christianity).¹²⁴ In Bangladesh, due to the resistance of husbands to male doctors and health professionals working with their wives, the family planning program provided female health workers who visited women in their house,

¹²³ KINGSLEY, D., *Population Policy: Will Current Programs Succeed?*, Vol. 158, No. 3802, pp. 730-739, Science, November 10, 1967

¹²⁴ HULL, T. and MOSLEY, W.H., *Revitalization of Family Planning in Indonesia*, The Government of Indonesia, United Nations Population Fund, February 1, 2009

educated them with necessary information about family planning and provided them with contraceptives. This type of program also appeared extremely useful to raise awareness and educate the population living in rural areas that were usually left out from state intervention.¹²⁵

During the 1970s, mass-media campaigns and commercial advertisements became effective governmental instruments used to modify population attitudes toward a new small-family norm and toward family planning. At that time, slogans started to proliferate through different media's such as television, radio, magazines, brochures. Examples of slogans are "A small family is a happy family" in India; "Boy or girl, two children are enough" in Bangladesh; "Stop at two, regardless of sex" in South Korea and "Two is enough" in Hong Kong. In China, the coercive one-child policy that was implemented in 1979 promoted the acceptance of the new and smaller family pattern through the slogan "Later, longer, fewer". In Latin America, the use of soap operas became a basic tool toward the promotion of family planning. The Population Media Centre, an international non-profit organization, worked together with Rede Globo, the most popular television network in Brazil, in order to include social and health themes in Brazilian telenovelas. Topics covered were, for example, female emancipation in the work sphere, machism was criticized, individualism was emphasized, criticism of religious and traditional values and emphasis on a new smaller and wealthier model of family was promoted. Population Media Centre and other authors made surveys in order to figure out the impact of the inclusion of social messages in television: it came out that the program "Pàginas da Vida", a Brazilian telenovela, helped about two-thirds of woman interviewed to take steps to prevent unwanted pregnancies. Moreover, Brazilian telenovelas reached an estimated 65 percent of all the Spanish-speaking population in Latina America, consequently producing effects on large-scale.¹²⁶ ¹²⁷ In Brazil during the 1970s, the military regime and the Catholics Church hierarchy opposed themselves to birth control measures also employing government propaganda to warn women of dangers of the birth control pill.

¹²⁵ SCHULER, S.R., HASHEMI, S.R. and HENDRIX JENKINS, A., *Bangladesh's Family Planning Success Story: A gender Perspective*, in *International Family Planning Perspectives*, Vol. 21, No.4, pp. 132-137, December 1995

¹²⁶ <https://www.populationmedia.org/location/brazil/>, PMC in Brazil , Population Media Centre, 2020

¹²⁷ CHONG, A., DURYEYEA, S. and LA FERRARA, E., *Soap Operas and Fertility: Evidence from Brazil*, in *American Economic Journal: Applied Economics*, Vol. 4. No. 4, pp.1-31, October 2012

Only the local clergy and the nongovernmental organisations that existed at that time educated and provided the population with contraceptives. The Brazilian Society for Family Welfare (BEMFAM) is an example of a non-profit organization that supported the anti-natalist movement in affiliation with the IPPF.

Other countries such as Tunisia, India and Bangladesh, used monetary or in-kind incentives in order to encourage families to practice birth control. In Tunisia, the government gave family allowances only for the first four children. In Singapore, families could benefit from income tax relief, preferred school places, allocation of public apartments and maternity leaves only for the first three children. In India, Bangladesh and Sri Lanka government gave monetary incentives to women or men that underwent sterilisation. Those countries applied different compensation methods: in Bangladesh, field health workers were paid in order to accompany individuals to the sterilisation procedure; differently, both in Sri Lanka and in India the sterilisation provider and the individual that underwent sterilisation received a compensation. During the 1970s, the number of sterilisations greatly increased.¹²⁸ This phenomenon caused an increase of attention of the international community and of governments toward the health consequences of high fertility rates and subsequently led to the progress of the notion of family planning towards the health rationale. Nowadays, the use of sterilisation remains the main contraceptive method used in those countries.

Delay of marriage, of childbearing and increased spacing between births were additional methods implemented to control fertility. In India and in Tunisia, for example, the legal age for marriage was increased: 18 years for women and 21 for men for the former and 17 for women and 20 per men for the latter. Similarly, China raised to 25 years for women and 28 years for men the age for marriage in urban areas, and in rural areas 23 years for women and 25 years for men. In addition, before implementing the one-child policy, China also established a period of three to four years between births and limited the number of children to three per couple.¹²⁹ The quantity of family-planning programs that developed during the 70s around the world was considerable. Those

¹²⁸NORTMAN, D.L., *Sterilisation and the Birth Rate*, in *Studies in Family Planning*, Population Council, Vol. 11, No. 9/10, pp. 286-300, September 1980

¹²⁹ *World Population and Fertility Planning Technologies: The Next 20 Years*, Vol.1, Congress of the United States, Office of Technology Assessment, February, 1982

programs were applied both in democratic and autocratic regimes, regardless of the religion and of the political orientation. In countries like Brazil, the main precursors and supporters of family-planning policies were nongovernmental organisations, while in other countries like India and Singapore, those measures were applied by the government.

3.3 Study of the decline in fertility rates

The study of the decline in fertility rates as consequence of the application of family planning programs and policies appears to be difficult since different countries applied a number of different and varied population-control policies within their borders. Consequently, the success or the failure in the reduction of the fertility rate is the result of the joint action of such policies. Moreover, data availability and studies on this subject are limited, consequently the analysis of the relationship between fertility rate and population control programs will be an evaluation resulting from the evidence collected.

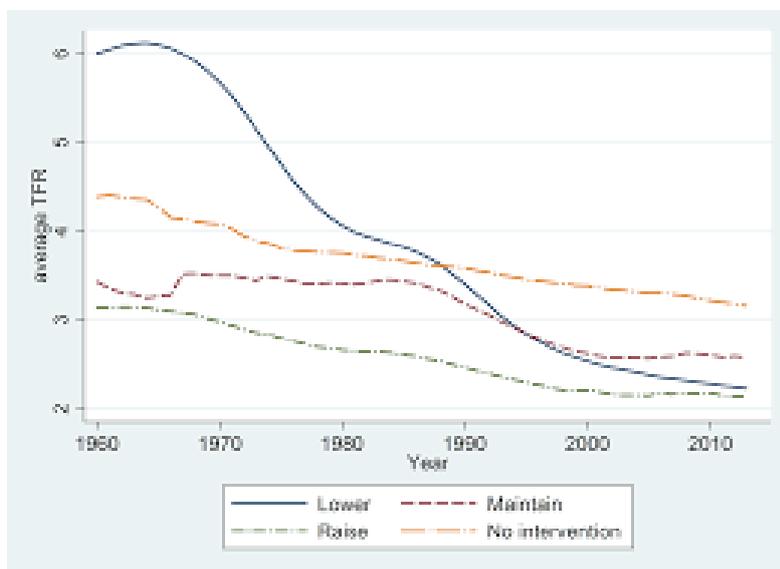


Figure 12. Average Total Fertility Rate variation by 2010 on the basis of population control policies implemented during the 60s and 70s according to UN World Population Policies Database. The goal of the policies implemented could be to lower, to raise or to maintain the average fertility level. There could also be no intervention.¹³⁰

¹³⁰DE SILVA, T. and TERNEYRO, S., *Population Control Policies and Fertility Convergence*, in *Journal of Economic perspectives*, Vol. 31, No. 4, pp. 205-228, 2017

As shown by Figure 12, in 1976 countries implemented different family planning policies with the aim of increasing, lowering or maintaining the average fertility level of the country. Some countries did not implement any policy in order to act on the fertility rate. Those countries presented the second-highest fertility rate until the 90s and since then became countries with the highest fertility rate. Data on fertility policies started to be collected in 1976 when some countries like India, Taiwan and South Korea had already implemented family planning policies since the 1960s. Fertility has also decreased in countries, predominantly European countries, where governments wanted an increase in fertility and remained at the lowest level of worldwide fertility rate. The most significant change in the average fertility rate has been experienced by countries that implemented policies and programs in order to reduce their average fertility rate, going from the highest worldwide fertility rate during the 60s, 70s and 80s and decreasing until reaching the second-lowest average fertility rate in 2013.

Following the analysis carried out by Tiloka de Silva and Silvana Terneyro¹³¹, three main measures are used to analyse the effectiveness and the intensity with which population control policies were implemented by countries: the funds placed for family-planning per capita; the family planning program effort index and the percentage of women exposed to family planning messages.

By analysing both the governmental and nongovernmental funds over the 70s, 80s and 90s, Latin American countries are those with the highest amount of funds for family planning programs per capita. The total funding amount exceeds US\$2 per capita in Costa Rica, EL Salvador and Puerto Rico. Moreover, Latin America also accounts for the highest proportion of nongovernmental funding, which are more than double than state-funding in some countries. Differently, if we look at Asia, funding mainly come from state-led funds. As analysed by Tiloka and Terneyro, there is a clear negative relationship between funds for family planning and changes in total fertility rate: countries that place a higher amount of money per capita in population control programs experienced a greater reduction in fertility rates. The study shows that on average 1 percent increase in funding per capita leads to a decrease of 5 percent in the total fertility rate. Another important

¹³¹ DE SILVA, T. and TERNEYRO, S., *Population Control Policies and Fertility Convergence*, in *Journal of Economic Perspectives*, Vol. 31, No. 4, pp. 205-228, Fall 2017

factor to take into consideration is the prominent importance and efficiency of government spending. After having carried out an inquiry on the decrease of the fertility rate taking into consideration government and private funding separately, what appeared was that government spending produced a higher decrease in the fertility rate, whereas nongovernmental funding are not that efficient.

The analysis of the family planning effort index is carried out using the 2001 Effort Index published by Ross and Stover¹³². Robert Lapham and W. Parker Mauldin started analysing the nature and the strength of the efforts of the programs to reduce fertility around 1970. In order to measure the strength of these programs, they assembled data about each program on the basis of four dimensions: policies, evaluations, services and method access. Lapham and Mauldin developed a questionnaire, which was subsequently modified by Ross and Stover, and sent it to recipients in 93 countries. The responses of each country were analysed and coded in order to create a set of 30 scores, divided into four groups: policy and stage-setting activities; service and service-related activities; evaluation and record keeping and availability of contraceptive measures. The total score had a potential of 0 to 300 points as each item could receive from 0 to 10 points. The questionnaire had been conducted four times in total: in 1982 in 1989, in 1994 and in 1999 covering a 27 years period. Figure 12 shows data collected during the cycles of questionnaire. By comparing the data collected over the years, in 1972, 8 countries were considered implementing strong efforts, compared with 14 in 1994. Programs that were regarded as moderately strong increased by three times, passing from 11 to 31. Countries implementing weak programs increased from 9 to 30 in 1994. Differently, countries that did not implement any program of a very weak program decreased from 49 to 1, the United Arab Emirates.¹³³ According to the Family Planning Effort Index, East Asia, South Asia and Southeast Asia implemented the strongest family planning policies reaching a total score of 60. Latin America, the Middle East and North Africa increased the strength of their policies across the decades reaching a score of 50 and 58 respectively in 1999. Sub-Saharan Africa, despite being the last region that implemented family

¹³² ROSS, J. and STOVER J., *The Family Planning Effort Index: 1999 Cycle*, in *International Family Planning Perspectives*, Vol.27, No.3, pp.119-120, Guttmacher Institute, September 2001

¹³³ ROSS, J.A., *Effort measures for family planning action programs: past trends and future prospects*, The Future Group International, Glastonbury, Connecticut, January 2009

planning policies in 1989-1999, had the greatest gain passing from a score of 8 in 1972, to 54 in 1999.

Region/country	1972	1982	1989	1994	1999	Region/country	1972	1982	1989	1994	1999
Overall average	20	29	45	48	54	Anglophone Africa (cont.)					
East Asia	49	58	76	68	64	Sierra Leone	0	16	35	47	u
China	83	84	87	92	86	Somalia	0	10	1	u	u
Korea, PDR	0	50	54	63	u	South Africa	u	u	62	56	54
Korea, Rep. of	80	79	81	71	55	Sudan	10	8	20	29	35
Mongolia	0	0	u	38	38	Tanzania	10	22	42	48	55
Taiwan	80	79	81	78	79	Uganda	0	17	12	44	54
						Zambia	0	16	49	41	50
						Zimbabwe	10	27	56	68	61
South/Southeast Asia	33	45	50	54	60	Francophone Africa	1	10	36	40	49
Afghanistan	10	11	36	u	u	Benin	10	11	28	38	45
Bangladesh	10	57	72	69	74	Burkina Faso	0	4	45	u	54
Bhutan	0	u	22	36	u	Cameroon	0	8	34	49	44
Cambodia	0	0	9	26	46	Central African Rep.	0	10	42	40	50
Fiji	u	50	u	u	u	Chad	0	7	20	27	43
Hong Kong	77	69	u	61	57	Congo	0	15	36	28	35
India	63	66	72	68	65	Côte d'Ivoire	0	6	55	38	50
Indonesia	47	75	80	83	82	Gabon	u	u	u	u	35
Laos	0	0	8	28	39	Guinea	0	5	40	50	60
Malaysia	60	51	66	54	69	Madagascar	0	9	40	33	42
Myanmar	0	4	12	27	37	Malawi	0	11	38	45	58
Nepal	20	37	59	51	57	Mauritania	0	4	21	32	37
Pakistan	27	40	48	48	57	Niger	0	5	38	46	47
Papua New Guinea	0	26	26	28	u	Rwanda	0	23	43	u	62
Philippines	53	56	49	60	57	Senegal	0	23	44	51	55
Singapore	87	79	63	63	44	Togo	0	14	30	u	63
Sri Lanka	40	67	80	69	69	Zaire	10	13	28	u	u
Thailand	37	61	80	75	75						
Vietnam	67	53	68	67	76	Latin America and the Caribbean	30	39	51	50	50
North Africa/Middle East	12	19	41	43	58	Argentina	u	u	21	21	30
Algeria	10	25	46	44	64	Bolivia	0	8	23	49	49
Cyprus	u	25	u	u	u	Brazil	0	43	32	43	59
Egypt	27	40	66	59	57	Chile	53	44	58	55	61
Iran	47	11	57	61	71	Colombia	53	71	62	66	64
Iraq	0	3	1	38	u	Costa Rica	70	33	16	46	32
Jordan	0	16	31	40	47	Cuba	50	52	65	54	u
Kuwait	0	5	u	23	u	Dominican Republic	47	55	54	67	50
Lebanon	0	33	49	33	60	Ecuador	20	35	58	53	46
Morocco	13	35	57	63	57	El Salvador	43	63	68	58	46
Oman	u	1	5	45	53	Guatemala	30	28	53	58	37
Saudi Arabia	0	1	u	5	u	Guyana	0	26	55	26	46
Syria	0	11	44	48	66	Haiti	10	36	42	38	51
Tunisia	40	59	69	82	71	Honduras	23	25	63	51	44
Turkey	20	29	46	54	59	Jamaica	77	56	66	65	62
United Arab Emirates	u	1	33	14	u	Mexico	13	66	77	74	75
Yemen	0	10	28	30	37	Nicaragua	0	20	u	53	49
Anglophone Africa	8	20	37	46	54	Panama	63	51	52	56	49
Angola	0	u	39	24	u	Paraguay	10	8	36	35	56
Botswana	u	27	75	66	u	Peru	0	22	51	59	59
Ethiopia	0	6	32	38	44	Puerto Rico	u	u	u	53	62
Gambia	u	26	u	u	u	Trinidad & Tobago	50	47	66	50	59
Ghana	10	18	52	53	63	Uruguay	u	u	42	39	34
Guinea-Bissau	u	14	28	36	u	Venezuela	23	31	54	38	29
Kenya	20	28	58	56	62	Central Asian Republics	na	na	na	39	52
Lesotho	0	14	45	43	62	Kazakhstan	u	u	u	34	42
Liberia	10	22	3	u	u	Kyrgyzstan	u	u	u	36	49
Malawi	0	6	16	44	50	Tajikistan	u	u	u	u	54
Mauritius	67	68	69	74	71	Turkmenistan	u	u	u	33	59
Mozambique	0	16	27	33	43	Uzbekistan	u	u	u	54	55
Namibia	u	u	11	43	54						
Nigeria	7	13	43	42	45						

Note: A "0" entry means that the score when rounded equaled zero. u=unavailable, because the country was omitted that year. na=not applicable, because averages could not be computed. Entries lacking data can affect the regional averages in each year.

Figure 12. Family Planning Effort Index and countries' scores by year of survey, country and region.¹³⁴

The analysis of the relationship between program effort scores collected during the three decades and the change in fertility since the implementation of family planning

¹³⁴ ROSS, J. and STOVER J., *The Family Planning Program Effort Index: 1999 Cycle*, in *International Family Planning Perspectives*, Vol. 27, No.3, pp. 119-129, Guttmacher Institute, September 2001

policies during the 60s until 2013, shows a strongly negative relationship. To sum up, countries with higher program effort experienced a stronger fertility decline.

Finally, to analyse the percentage of women and couples exposed to family planning messages through mass media and the impact of those messages, the authors take into consideration the Demographic and Health Surveys (DHS). Those surveys have been carried out in 57 countries over many years. Countries taken into consideration are mainly located in the sub-Saharan African region and the collection of data has been carried on during the 1990s. Data provided by those surveys summarise the exposure of women and men age 15-49 to radio, newspapers and television proposing family planning messages. Women who heard or saw family planning messages from mass media are more likely to use contraceptive measures than women who have not. The total amount of women that during the surveys gave birth and had been exposed to family planning messages was extremely lower than the percentage of women who had not been exposed to them and gave birth in that same period. Moreover, even being small, the number of women that entered in contact with family planning messages in newspapers, magazines, radio, tv or other mass media presented a particularly low level of fertility. Therefore, it is important to notice that the exposure to family planning messages is more usual and has a greater impact on women with a higher level of education. It is generally accepted that with the increase of women's highest level of education, contraceptive use increases too, and the fertility decreases. Consequently, part of the great impact that the exposure to family planning messages had, may be attributable to the educational profile of women. Moreover, women who live in urban areas present a lower fertility level than women living in rural areas. Among other factors, this aspect can also be explained through the fact that they are more easily exposed to family planning messages since radio, television, newspapers and magazines are more available in urban areas.¹³⁵

¹³⁵ PARR, N., *Family Planning Promotion, Contraceptive Use and Fertility Decline in Ghana*, in *African Population Studies*, Vol. 17, No 1, pp. 83-101, May 2000

3.4 Policies toward a greater fertility rate reduction: Empowering women

The strict link between the status of women, their health and their fertility rate make the issue of gender inequalities and female empowerment a central issue for governments that want to stabilise population growth to a replacement level. Gender equality should become one of the main strategies applied in population control policies by governments. The notion of women's empowerment has been debated for a long time and wide variations remain with regards to the definition. The disagreement on the concept of women's empowerment makes it difficult also to reach a globally accepted way on how to measure it. Studies show that women's empowerment is linked to fertility with a causal relationship, and the reverse is also true. Consequently, a lower fertility is recognised as leading to a higher women's empowerment and vice versa. Notably, women's education and women's participation to the paid work force are negatively associated with fertility. Higher education provides women with modern ideas and values, consequently promoting egalitarianism. Actually, the World Bank identified women's education as the main investment that governments in developing countries should make in order to reach a greater level of advancement in women's reproductive health and women's empowerment, and to foster economic growth.¹³⁶ A greater economic independence provides women with the capacity to freely decide for their own sakes about all aspects of their life including contraception, number and spacing of children. Results collected during many surveys showed the causal relationship of women's empowerment affecting the fertility rate in Taiwan, India, Turkey and Tanzania. In Turkey, De Anna L. Gore, for example, found out that a greater access to education reduces significantly the risk of a second and third birth. While nearly every woman with no education had a second birth within five years after the birth of their first child, only 55 percent of women with more than the primary education, ended the five years period with a second birth. Moreover, the risk of a second birth for women with no education is 1.59 times greater than the risk for women with primary education. In addition, women with secondary education have on average 40 percent less risk of having a second birth

¹³⁶ <https://www.worldbank.org/en/topic/girlseducation>, Girl's education, The World Bank Group, Last Updated September 25, 2017

than women with no education.¹³⁷ For what concerns the inverse relationship, studies carried out in China and India suggested that the reduction of the fertility rate made parents investing more equally in sons and daughters, therefore providing equal opportunities both in education and employment. As examined by K. Allendorf in 2012, according to the data collected over years by the National Family Health Survey (NFHS) in West Bengal, the fertility decline led to a symmetrical gender system in the family, therefore empowering daughters. He suggests that in conjunction with a strong fertility decline and with the diffusion of contraceptive methods, families in the area showed clear changes in the treatment of sons and daughters and in the relative value given to them. Son preference appeared to be declining, consequently increasing gender equality and leading couples to become indifferent to the gender of children. Simultaneously, the gender gap in education declines as parents are more prone to send both sons and daughters to school. Moreover, the fertility decline causes a decrease in the interest of parents to control women's sexuality and therefore causing a greater female sexual freedom.¹³⁸ However the notion of empowerment is dynamic, it results from the subjective accumulation of life experiences and achievements, therefore it is relative and contextual. As underlined in the paper *Economic Empowerment and Reproductive Behaviour of Young Women in Osun State*, empowerment is context-specific since it differs from culture to culture, from situation and stages of the life cycle. The use of contraceptive methods by women was once considered empowering, but when the vast majority of women in one country makes use of contraception it becomes the norm.¹³⁹ A widely accepted definition of empowerment identifies women's empowerment as the process to achieve free choice in all aspects of life, including decisions about education, employment, health, bodies and political representation.¹⁴⁰

¹³⁷ GORE, D. L., *Women's Status and Fertility in Turkey*, Florida State University Libraries, pp.44-45, 2010

¹³⁸ ALLENDORF, K, *Like Daughter, Like son? Fertility Decline and Changing Gender Relations in Darjeeling, India*, International Centre for Research on Women Fertility & Empowerment Working Paper Series, pp. 1-32, March 2012

¹³⁹ ODUTOLU, O., ADEDIMEJI, A., BURUWA O. *et al*, *Economic Empowerment and Reproductive Behaviour of Young Women in Osun State, Nigeria*, in *African Journal of Reproductive Health*, Vol. 7, No. 3, pp. 92-100, December 2003

¹⁴⁰ PHAN, L., *International Journal of Sociology of the Family*, in *Interational Journals*, Vol. 39, No. 1/2, pp. 49-75, Spring-Autumn 2013

As already mentioned, during the 90s there has been a shift of governments toward the human rights rationale. The turning point is represented by the Conference on Population and Development (ICPD) held in Cairo in 1994. This conference represented the starting point for the establishment of a new and broader scope of population policies: social development became interconnected with family planning, especially the advancement of women and their reproductive health became key factors on which governments needed to work in order to ultimately reduce the level of fertility and slow the population growth. Women's rights advocates asserted that family planning policies implemented by governments during the 70s and 80s did not consider women's health and rights. The distribution of contraceptives without considering the health and the cultural background of women who made use of those contraceptives caused an overall lack of attention toward women's health and was not sufficiently effective in order to reduce population growth. Moreover, many countries especially Asian countries employed evaluations of family planning programs based on targets and quotas offered to who accepted to undergo sterilisation or make use of family planning methods. This type of implementation of family planning policies promoted coercion and violated women's right to reproductive freedom. The social and cultural backgrounds are aspects that governments should consider in order to implement more effective policies. After more than two decades since the implementation of the ICPD Programme of Action and the implementation of other international instruments such as the Beijing Declaration and Platform for Action, the Millennium Development Declaration and the Sustainable Goals, globally 214 million women continue to lack access to modern family planning measures. Even if contraceptive prevalence has increased in regions such as Asia and Latin America, in sub-Saharan Africa remains low, passing from 23.6 percent in 2008 to 28.5 percent in 2015. The unmet need for modern contraceptives of women in reproductive age is 24.2 percent. In regions like Asia, Latin America and the Caribbean, the levels are on average 10.2 percent and 10.7 percent, respectively.¹⁴¹ While many countries already made great steps forward, many challenges still remain. Those challenges are particularly present in less developed countries where the access to reproductive health care remains weak. The need to increase the overall educational level, the access of women to the labour force

¹⁴¹ <https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception>, *Family planning/Contraception*, World Health Organization, February 8, 2018

and the increase in the household decision making are the main factors on which governments should put their attention in order to implement family planning programs. The realisation of fundamental rights, including health and reproductive rights, the need to empower women in order to make it possible for them to participate in economic, social, cultural and political life, the supply of modern contraceptive methods together with a universal access to health care services and the provision of an higher education together with a comprehensive sexual education are necessary instruments that governments must ensure in order to have the possibility to shape their future demographic trends. I will analyse the importance of right-based and gender-responsive policies in order to address population dynamics. The problem of lack of knowledge and of studies that examine the impact of women's empowerment and fertility in developing countries should be addressed by the international community. Policy makers should focus on increasing the knowledge and information that they have with regards to their population in order to use population data and projections to shape population policies aimed at empowering women and stabilising population growth.

3.5 Women's empowerment and changes in fertility

In September 1994, during the Cairo Conference, the empowerment of women was declared crucial for governments in order to act on the development and on the stability of their population. Recommendations in the Cairo's Programme of Action contained new and central aspects: the importance to provide a more comprehensive reproductive healthcare service that could take into account the health and the rights of women, including family planning, safe pregnancy and delivery services, prevention and treatment of sexually transmitted infections and abortion (where legal), information and education on sexuality and on contraceptive methods and the elimination of harmful practices against women such as child marriage, forced marriage and genital cutting. The focus on women's rights and health was driven both by nongovernmental organisations, more than 1,200 NGO's participated to the conference, and by the participation of

women's network.¹⁴² The Cairo Conference, along with the 1993 World conference on Human Rights held in Vienna, emphasised the importance of protecting the rights of women and girls as they are part of universal human rights and their reproductive and sexual health are among these universally recognised rights. The goal of improving reproductive health fixed by the Cairo Conference involves many aspects of women's life and not only providing healthcare services during the child-bearing age. Poor nutrition during childhood and adolescence, harmful practices such as female genital cutting also known as female circumcision (practice that still affects an estimated 2 million girls each year in many African regions and in some countries in the Middle East and Asia)¹⁴³, sex trafficking, domestic violence, unsafe abortions are examples of situations encompassed by the notion of reproductive health. The Cairo's Programme of Action set out three main areas on which governments should act in order to increase women's empowerment and reach their population goals: increasing family planning, reducing maternal deaths and preventing sexually transmitted infections.

Family planning is a key element at the core of reproductive health and population policies. Thanks to the implementation of family planning programs, governments lower the average fertility rate and slow down the growth of the population by helping women spacing their pregnancies and preventing unwanted pregnancies. Unintended pregnancies are of particular importance in population growth since they represent 38 percent of all pregnancies, about 80 million pregnancies every year. Reducing unwanted pregnancies would represent a successful strategy in reducing the total fertility rate.¹⁴⁴ Moreover, through family planning, women and girls can live healthier lives and wait to have a child until they are out of their teens. As already mentioned, the prevalence of teen pregnancy remains quite high in many countries around the world, especially in developing regions such as Africa, Asia and Latin America. Teen pregnancy in developing countries is usually strictly related to malnutrition and poor health care that also cause long-term medical problems both for the mother and the child. A global increase in the use of family

¹⁴² ASHFORD, L., *New Perspectives on Population: Lessons from Cairo*, in *Population Bulletin*, Population Reference Bureau, Washington, DC, Vol. 50, No.1, March 1995

¹⁴³ <https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation>, *Female genital mutilation*, World Health Organization, February 3, 2020

¹⁴⁴ SPIEDEL, J.J., WEISS, D.C, ETHELSTON, S.A. and GILBERT, S.M., *Population policies, programmes and the environment*, in *Philosophical transactions of the Royal Society B: Biological Sciences*, Vol. 364, No. 1532, pp. 3049-3065, October 2009

planning has been registered in developed countries. Moreover, a smaller family size is the new image of family that spread also in developing countries. In Kenya, for example, during the 1970s women wanted on average seven or more children. During the 90s, this number drop to an average of 4 children.¹⁴⁵ Until today, the governmental and nongovernmental promotion of family planning and development of efficient family planning policies played a central role in order to empower women and consequently act on the demographic sphere. Despite the huge steps forward that have been made over the years, many barriers to family planning programs and large disparities in the use of contraceptives remain. Across countries, there are great disparities on the adoption of contraceptive methods. For example, in sub-Saharan Africa less than 10 percent of girls in childbearing age make use of contraceptive methods, whereas in Brazil's more than 60 percent make use of them and in China the percentage increases to more than 80 percent. Moreover, within countries, large disparities are present between rural and urban areas as urban areas present a wealthier and more informed population, consequently the use of family planning methods is higher. Many barriers to family planning use still remain for many reasons: many women fear the possible side effects of contraceptive methods, partially cause by disinformation and a lack of education offered by family planning programs. Often, husbands and families dissuade women from using contraceptives both for religious and cultural factors, as large families are the cultural norm. Finally, young couples struggle to access to family planning due to economic or social barriers. In this sense, in less developed countries nongovernmental organisations played a central role in the supply of affordable contraceptives as they have access to cheaper or donated contraceptive methods. This allows nongovernmental organisations to provide contraceptives to the part of population that cannot afford to buy them.

Thanks to the growing activism of women's rights advocates and their increased participation to the international political debate, the discussion on gender issues became central both because differences between men's and women's roles and status impede the economic and cultural development of one country, and because of the connection between women's status within the society and the issue of population growth. The innovative aspect introduced by the Cairo Conference and the women's conference in

¹⁴⁵ BANKOLE, A. and WESTOFF, C., *Childbearing Attitudes and Intentions*, in *DHS Comparative Study*, No.17, Maryland, USA, 1995

Beijing has been the call for increasing the equality between women and men in all areas of private and public life. Governments had to reduce the disadvantages that women had to face in almost all countries and in all spheres of life. The close relation between gender inequalities and women's health appeared clear in many aspects of the life of one woman: the problem of sex-selective abortions or infanticide, typically practiced in India, East and South Asia and especially in China during the one-child policy; in situations of scarcity of food, girls eat less than boys and in rural areas are less likely to receive healthcare attentions than boys; in Asia and especially in Africa girls are still subjected to genital cutting; girls may be pressured by families to have sex and to get married at an early age; in countries where numerous families are the norm, married women may be pressured to have more children than they want or may not be let use contraceptive methods by husbands and families. Finally, in all societies, women have more possibilities to struggle with domestic violence, from the physical abuse to the psychological and economic ones, than men. The fear of abuse impacts the life of women, who consequently becomes less willing to resist the demands of their families and husbands. Another important factor that must be taken into consideration is the fact that even nowadays women are expected to have children. The end of the twentieth century and the beginning of the twenty-first century saw the emergence of huge transformations in women's reproductive experience and the number of women who decided to be childfree increased consistently. The rise of feminism, the fact that more and more women participate in the paid workforce, their access to higher education and the broader access to reproductive methods led to an increase in childfree women. In industrial, urban and rural areas the notion of feminine gender identity is intertwined with the notion of motherhood, and the fact of choosing a childfree life is usually seen as unfeminine, deviant and unhealthy. Women that are not willing to reproduce themselves are considered selfish and unnatural.¹⁴⁶

Women's lack of power is a mixture of social and cultural factors that put women's health under threat. These factors include for example the limited exposure of women to information and to a quality education, the lack of good health practices and the lack of freedom of movement and of control over money and other resources. In South

¹⁴⁶ GILLESPIE, R., *Childfree and Feminine: Understanding the Gender Identity of Voluntarily Childless Women*, in *Gender and Society*, Vol. 17, No. 1, pp. 122-136, Sage Publications Inc., February 2003

Asia and in the Middle East, usually women lack health care services as they can not travel alone or be treated by male healthcare providers. Finally, poverty is intrinsically intertwined with gender disadvantages. Women living in the poorest households usually present the highest fertility rate, limited and poor nutrition and have limited access to healthcare services even during pregnancy, therefore contributing to higher maternal and infant death rates. Women in this situation also experience an early entry into motherhood and frequent pregnancies that will perpetuate the cycle of poverty and of gender inequality. The disadvantaged position of women in the poorest households also makes them more vulnerable to physical and sexual abuse, to coerced sex and to unwanted pregnancies since the access to contraceptive methods is usually controlled by the sexual partner or the family. The access of women to and the control over the economic resources can provide them with an increased control over their sexuality and over their role in the decision making in controlling their fertility.

Four major aspects of women's empowerment can be identified as closely related to fertility: women's education, women's participation to the labour force, women's participation in the decision making of the household and women's use of contraception. The negative relationship between fertility and women's education and employment has already been established since many years. Women's education and employment are intertwined since a higher level of education provides women with more chances to enter the workforce. Moreover, women's employment provides women with a greater economic independence thus enabling women to better access to healthcare services and contraception use. Increase in the participation of household decision making also enables women to better control their fertility.¹⁴⁷ As already mentioned, not only women's empowerment affects the total fertility rate, but the reverse relationship is also valid. This relationship has rarely been studied. In 2012, a study conducted in China analysed how the fertility decline affected the gender inequality by improving the status of women. Such effect appeared to be more pronounced in the more recent marital cohorts. In this type of causal relationship, lower fertility rate causes a reduction in the number of siblings in the family, thus giving better opportunities to daughters in terms of years of schooling and

¹⁴⁷ KABEER, N., *Gender Equality and Women's Empowerment: A Critical Analysis of the Third Millennium Development Goal*, in *Gender and Development*, Vol. 13, No. 1, pp. 13-24, Taylor & Francis, Ltd., March, 2005

subsequently professional achievements.¹⁴⁸ The term “circular cumulative causality”, suggested by Eva M. Bernhardt in 1993, properly describes this mutual causal relationship between women’s empowerment and fertility.¹⁴⁹ Moreover, patriarchal cultural factors highly impact the relationship between women’s empowerment and fertility. The major patriarchal norms that affect this relationship are the preference for high fertility since children are seen as a source of labour and a high fertility rate improves the status of the woman within the family, and the preference for sons. This second typical aspect of patriarchal cultures affects fertility since women maintain a high fertility rate in order to have more sons, consequently, have a large number of children. Often couples keep having children until they reach the desired number of children. These patriarchal norms obviously affect the empowerment of women and restrict the decision-making power of women with regards to their fertility and the use of contraceptive methods. As already mentioned, these patriarchal norms directly affect all aspects of women’s and girls’ empowerment and health during their life cycle for example by putting into risk of sex selective abortions the female new-borns, risk of malnutrition since boys eat first, and risk of poor healthcare assistance.

Women’s education is strongly associated with lower fertility and more women spend time in schooling, more they will tend to delay marriage and childbearing and reduce the number of children. Even if since the adoption of the Beijing Platform for Action in 1995 considerable progress has been made in closing the gender gap in school enrolment, in some countries particularly in Africa, Middle East and South Asia, girls are still more disadvantaged than boys. According to data collected by UNICEF, in Chad and Pakistan, for example, the Gender Parity Index (GPI) value corresponds to 0.78 and 0.84, respectively. In terms of numbers, this means that in Chad there are 78 girls and in Pakistan there are 84 girls that are enrolled in primary school every 100 boys.¹⁵⁰ Moreover, girls are more likely to interrupt their studies for many reasons that may include early marriages, childbearing and household duties for example. Women’s

¹⁴⁸ WU, X., YE, H. and HE, G., *Fertility Decline and Women’s Empowerment in China*, International Centre for Research on Women Fertility and Empowerment Working Paper Series, pp. 1-35, August 2012

¹⁴⁹ BERNHARDT, E.M, *Fertility and Employment*, in *European Sociological Review*, Vol. 9, No.1, pp. 25-42, Oxford University Press, May 1993

¹⁵⁰ <https://data.unicef.org/topic/gender/gender-disparities-in-education/>, *Gender and education*, UNICEF Data, February 2020

education is a key instrument toward the reduction of the overall fertility rate as more educated women tend to marry later, have smaller and healthier families and are more likely to use contraception. In Turkey, data collected from the Turkish Development Health Survey of 2003 showed that women's education strongly affects women's empowerment and the number of children, especially concerning the third birth.¹⁵¹ Moreover, in Taiwan, the increase in the overall level of education led to a decrease in marriage rates and, between 1970 and 2007, the age for marriage significantly increased passing from 22.1 to 28.1 years for women and from 28.2 to 33 years for men.¹⁵² As will be analysed in the next paragraphs, women's higher education also impacts women's employment, thus further reducing the fertility rate since women with higher education tend to have more chances to find a paid job and entering the workforce encourages lower fertility. Moreover, female's greater instruction leads women to higher rate of healthcare services use, therefore enhancing the use of contraceptives and other family planning measures. More educated women tend to better understand their health and make a better use of prenatal and postnatal care, have less children and take better care of them. Studies carried out both in Nigeria and Vietnam showed that women with more than the primary education have a better understanding of diseases and of how to prevent and treat them. This also relates for what concerns the use of contraception. A study carried out in 2002 based on data collected by the Vietnam Development Health Surveys, showed that Vietnamese women with higher level of education, have more chance to use modern methods of contraception and to use them properly than women with no or low schooling.¹⁵³ The negative relationship between education and fertility is valid both at the individual and at the country level. Countries with higher rates of women's schooling present lower country's fertility rates. In 2005, a study analysed the impact of women's illiteracy rates on the total fertility rates of 82 developing countries by using data collected by the World Bank in 2000. The study clearly showed that countries with higher rates of illiterate women also had higher rates of fertility, in comparison to countries with better

¹⁵¹ GORE, D. L., *Women's Status and Fertility in Turkey*, Florida State University Libraries, pp. 44-45, 2010

¹⁵² LEE, M., *Transition to Below Replacement Fertility and Policy Response in Taiwan*, in *The Japanese Journal of Population*, Vol. 7, No.1, pp. 71-86, March 2009

¹⁵³ THANG, N. M. and ANH, D. N., *Accessibility and Use of Contraceptives in Vietnam*, in *International Family Planning Perspectives*, Vol. 28, No. 4, pp. 214-219, Guttmacher Institute, December 2002

education levels.¹⁵⁴ Even if progress has been made in studying the causal relationship between women's education and fertility, still much needs to be done on the analysis of mechanisms through which women's schooling affects the fertility level. In order to obtain a broader overview of the situation, studies should concentrate on the evidence of how different education levels and different institutional settings across countries impacts fertility. Deeper analysis would provide countries with data, thus helping governments put in place adequate population policies and designed programs according to the characteristics of each population. Governments should also focus on strengthening education for the disadvantaged and less- educated in order to trigger a long-term chain effect so that the future education of their children would be improved.¹⁵⁵

Employment is another factor that is considered among the main factors that influence fertility. In order to talk about the correlation of female employment and fertility, it is important to keep in mind that at the country-level, so at the macro-level, the relationship of female employment and fertility represents an ecological fallacy. This means that at the macro-level countries that present a higher level of women's participation in the work force also present a high level of fertility. On the contrary, at the micro-level or individual-level, women who participate to the paid workforce present lower fertility rates. The fertility and female employment puzzle and its correspondent ecological fallacy makes it necessary to analyse the micro-level data and the macro-level data separately since it is impossible to deduce micro-level associations from macro-level data and vice versa.¹⁵⁶ As showed by figure 13, once the negative relationship between women's employment and fertility was the norm also at the macro-level since at a higher rate of female participation in the workforce corresponded a lower fertility. Nowadays, evidence collected shows that this relationship became more complicated. This unexpected turn happened relatively recently since, just four decades ago, the correlation between fertility and female labour force participation rates was negative at the country-level too.

¹⁵⁴ HAYASE, Y., *Gender Perspectives in Family Planning: The Development of Family Planning in postwar Japan and Policy Implications from the Japanese experience*, in *Gender and Development*, Palgrave MacMillan, 2005

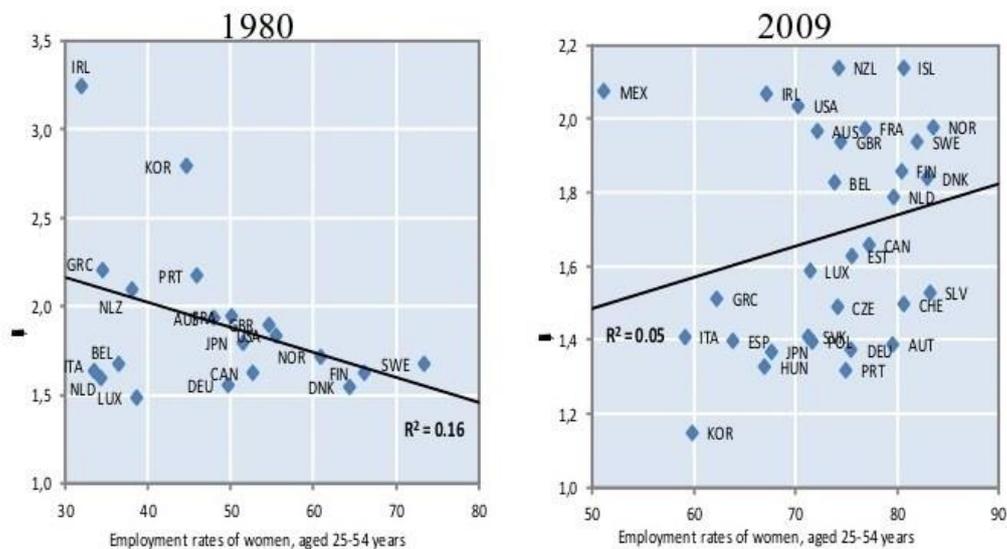
¹⁵⁵ JUNGHO, K. *Female education and its impact on fertility*, Ajou University, Korea and IZA, Germany, February 2016

¹⁵⁶ KOGEL, T., *Simpson's paradox and ecological fallacy are not essentially the same: The example of the fertility and female employment puzzle*, Working Paper, University of Greifswald, June 2017

At the country-level, Karin L. Brewster and Ronal R. Rindfuss analysed the relationship between fertility rate and female employment in 21 developed countries. Through this analysis they noticed that countries with levels of female labour force participation relatively low also presented low levels of fertility. Greece, Spain and Italy for example, in 2000 presented among the lowest fertility rate, around 1.2 children per woman. These countries also presented the lowest female employment among the developed countries, on average 40 percent. Differently, in other developed countries the authors noticed that the average fertility rate is around 1.6 and 2 children per woman and the participation in the workforce ranged from around 60 to 80 percent like in the case of the United Kingdom and Norway. Between 1970 and 1996, United States, Finland and Denmark almost did not change their average fertility rate, while their women's employment increased on average by 15 percentage points.¹⁵⁷ The transition from a negative relation to a positive one can have many reasons: many women improved their ability in spacing and limiting pregnancies so as to spend less time on child care and more at work; differently from the past, in many sectors the attitudes toward the employment of women and of women with children or who want to have children have become more tolerant; governments apply new policies that protect women and policies on family and child that ensure more flexibility for women, and in many countries for men too.¹⁵⁸

¹⁵⁷ BREWSTER, K.L. and RINDFUSS R.R., *Fertility and Women's Employment in Industrialized Nations*, in *Annual Review of Sociology*, Vol. 16, No. 26, August 2000

¹⁵⁸ ASHFORD, L. S., *New Population Policies: Advancing Women's Health and Rights*, in *Population Bulletin*, Vol.56, No.1, p.27, Population Reference Bureau, March 2001,



Source: OECD Family Database

Figure 13. Relationship between female labour force participation rate expressed as a percentage of women aged 25-54 years (x-axis) and total fertility rates (y-axis), in 1980 and 2009. The graphs explicitly show the variation in the relationship at the country level, passing from a negative relation in 1980, to a positive relation in 2009. Between the two graphs, the relative position of the majority of countries changed very little. Countries like Italy, Spain and Greece remain clustered in the left part of both graphs, while the Sweden, Finland and Denmark remain in the right part of both graphs. Fertility in the former group decreased by more than one child per woman while women's participation in the workforce increased from an average of 35 percent to an average of 60 percent. In contrast, the total fertility rate in the latter group of countries changed very little or did not change at all even though the proportion of women's employment changed similarly in Italy, Greece and Spain, passing from an average of 65 percent to an average of 82 percent.¹⁵⁹

Differently, at the individual level, many studies that analysed the relation between women's fertility and employment showed a clear reduction in the fertility rate linked to the growth of the female participation in the labour force. A key factor that affects this negative relation is the incompatibility between being mothers and being workers. Secondly, having a paid job increases the possibilities of women, their decision-making power in their life and in the family circle and encourages them to access the

¹⁵⁹ <https://www.quora.com/Is-it-possible-for-a-country-to-increase-female-participation-in-the-labor-force-without-decreasing-total-fertility-rates#ukSEf>, MEWATY, S., *Is it possible for a country to increase female participation in the labour force without decreasing total fertility rates?*, M.S. Economics & Finance, Peking University, 2016

healthcare system and make use of contraceptive methods. Moreover, independence at the economic level affects the rates of remarriage and of childbearing after marital disruption consequently reducing the rate of fertility. Finally, extensive labour can cause pressures and responsibilities in the workplace thus reducing the desired number of children. The factor of role incompatibility has been the most studied among scholars since it is considered as the main factor that drives the fertility decline. Employed women must overcome higher opportunity costs of having children since childbirth and the maternal leave may impede their professional development and hinder their career achievements. Giving higher importance to the job career, employed women tend to postpone childbearing and have less children than non-employed women. Moreover, spending time in the work market reduces energy and time, especially leisure time, of women, who will therefore tend to have less children. Anyway, despite the importance of the relation between women's employment and fertility rate to enhance family planning policies, few studies analyse the way in which participation to the paid workforce influence fertility. One of the most founded mechanisms by which women's employment can depress fertility is by postponing the transition to parenthood. In Japan, for example, a study showed that both the higher educational rate combined with the participation to the paid workforce and the rejection of the traditional domestic roles, appeared to be fundamental factors leading to a delay of the parenthood.¹⁶⁰ Other studies suppose that the negative relation is more pronounced only after the first birth, when women must face the difficulties of continue working while childrearing. Supporting this thesis, a study suggested that for Swedish women, the risk of a second or third birth are significantly reduced among women who participate to the paid workforce than among housewives. Moreover, this risk is even narrower among the youngest cohorts of women.¹⁶¹ At the individual level, a paid employment is also considered important to enhance women's status since reaching a greater economic independence, women can acquire a higher decision-making power and control over resources both in their life and in the family circle. Enhancing their decision-making power has also a huge role toward women's access to healthcare services and family planning methods. Similarly to the relation

¹⁶⁰ TSUYA, N. and MASON, K., *Changing gender roles and below-replacement fertility in Japan*, pp.139-167, 1995

¹⁶¹ HOEM, B. and HOEM, J., *The impact of women's employment on second and third births in Sweden*, in *Population Studies*, No. 43, pp. 47-67, 1989

between women's education and fertility, women's employment negatively affects fertility by improving women's status. However, not all types of employment enhance women's empowerment. In India, for example, money earned by women within the household are managed by their husbands.¹⁶² Moreover, activities such as helping in agricultural operations, fetching water or raise children and all activities carried on by women for the entire household are not considered economic activities by men, thus do not help women enhancing their status within the family.¹⁶³ Moreover, a higher rate of women than men work in the informal sector like street vending and market work, where wages are very low and that are nor recognised as paid jobs. In addition, a greater percentage of women than in the past remains in the work force during its reproductive age. This can affect the status of women's health since it leads to a dual burden : women work outside the home, and sometimes women are subjected to work exploitation more than men, while at the same time household chores remain their responsibility, such as for example cooking, cleaning and child rearing. The few studies available on the issue show that women spend 50 to 70 percent as much time as men on paid work, while spend almost twice as men on unpaid work. According to data provided by the Organisation for Economic Cooperation and Development (OECD), in Italy men and women spend respectively 130 and 306 minutes per day in unpaid work, and 220 and 133 respectively minutes per day in paid work. Similarly, in Austria, men spend 135 minutes per day in unpaid work while women spend 269 minutes per day. Then, men spend 364 minutes per day in paid work, while women spend 248 minutes per day.¹⁶⁴ The Cairo Population and Development Conference and the Beijing women's Conference encouraged governments to provide additional support to working women in order to further reduce the gender gap within their borders. Supports can be given in form of child-care assistance, maternity leave, provision of microcredit and other types of flexible arrangements that could help working women.

¹⁶² BATIWALA, S., *The meaning of empowerment: New Concepts from Action*, in *Population Policies Reconsidered: Health, Empowerment and Rights*, pp. 127-138, Harvard University Press, 1994

¹⁶³ DESAI, S, *Gender Inequalities and Demographic Behaviour*, The Population Council, New York, 1994

¹⁶⁴ <https://stats.oecd.org/index.aspx?queryid=54757#>, *Employment: Time spent in paid and unpaid work, by sex*, Organisation for Economic Co-operation and Development (OECD), May 27,2020

Women's participation in household decision-making is another important factor that shapes women's empowerment and women's fertility. The level of women's participation in household decisions is not uniform across countries, especially in developing ones, and often decisions on women's life and health are taken without their participation. In South Asia, a survey revealed that household decisions of women's health are taken without considering their opinion in the majority of Nepal (72.7 percent), in Bangladesh (54.3 percent) and in Indian (48.7 percent) households. This survey also underlined that the decision-making power of women proportionally increased with age, education, number of children. Moreover, women that are part of the paid workforce have a greater authority in the decisional process than unemployed women, as well as urban women are more involved in the decision making than women living in rural areas. In rural Bangladesh, higher rates of illiteracy and the absence of a paid job led to an extremely high level of fertility and a lower healthcare assistance to women. Women from richer households benefit from a better healthcare and have a relatively higher autonomy than poorer women. However, as underlined by the study, household decision making power of women and men is strongly influenced by cultural and ethnic identities and by societal norms based on unequal patriarchal relations. In rural Bangladesh, despite the socioeconomic development interventions, those patriarchal norms remain at the basis of family relations consequently hindering women's empowerment. Differently, through the improvement of the educational level and the promotion of women's autonomy together with the promotion of self-confidence, of awareness-rising of women's rights and the building up of women's capacity to control household resources, those measures could include gender equality as a core value in governmental policies therefore increasing women's empowerment. Governments must work on reducing the gender gap in education and in the employment system since they are functional toward a greater women's participation in the household decision making.¹⁶⁵ Women's decisional power in the household can be distinguished into two different groups or categories: the decisional power that concerns general and broader decisions related to the household and its members, and the decisions that directly involve women's health, their fertility and family planning methods. The increase in women's participation and power to both

¹⁶⁵ SENARATH, U. and GUNAWARDENA, N. S., *Women's Autonomy in Decision Making for Health Care in South Asia*, in *Asia-Pacific Journal of Public Health*, Vol. 21, No. 2, pp.137-143, April 2009

categories generally leads to a direct and consequent decrease in fertility. As we have already seen, in rural Bangladesh for example, the participation of women to general household decision making is influenced by their age, education and whether they participate to the paid workforce. In Oman, women with university education have a highest decisional power within the family. Similarly, employed women have a significant higher participation to the decision-making process than unpaid women.¹⁶⁶ Another study that reported the low level of decision making of women within the household is a study conducted on twenty Vietnamese couples at the end of the 1990s. Data collected by these surveys clearly showed that both spouses agreed that the husband was the only one that could take decisions with regards to the family size, the use of contraceptives and on abortion too. In Vietnamese culture women are subordinate to men during all their life: they are subordinate and subject to their fathers, their husbands and, in widowhood, to their sons. Their identity is built around the roles of daughter, wife and mother and they are expected to beget a male heir. Those traditional patriarchal values and structure still remain strong in Vietnam even after the government attempts to spread a new family culture in which women were equals to man and in which smaller families should have become the norm together with a higher attention to women's health. Anyway, family planning programs did not portray men as active agents of change but only as supporters. Despite the development of a legislation in favour of gender equality, traditional patriarchal norms remain in Vietnam¹⁶⁷ and a quite high birth rate was maintained, with 2.20 children per woman.¹⁶⁸ In Egypt, the practice of breastfeeding as a contraceptive method represents an example of lack of power within the fertility decision-making of the households. This practice is directly and negatively connected to women's empowerment and to women's participation to household's decision making since a low empowerment within the family circle leads women to have a lower power on the use of modern contraceptives. Therefore, women resort to make use of breastfeeding and the consecutive passive lactation amenorrhea as a contraceptive method. This clearly also

¹⁶⁶ ANGE, A. and ALFIFI, M., *Determinants of Women's Fertility in Oman*, in *Saudi Medical Journal*, Vol. 24, No. 7, pp.748-753, 2012

¹⁶⁷ JOHANSSON, A., NGA, N.T., HUUY, T.Q., DAT, D.D., HOLMGREN, K., *Husbands' Involvement in Abortion Vietnam*, in *Studies in Family Planning*, Vol. 29, No. 4, pp. 400-413, Population Council, December 1998

¹⁶⁸<https://www.macrotrends.net/countries/VNM/vietnam/birth-rate>, Vietnam Birth Rate 1950-2020, Macrotrends

implies a higher birth rate for less empowered women since breastfeeding does not represent a reliable contraception.¹⁶⁹ For what concerns contraceptive related decisions, not many studies were made on this issue, but the evidence collected so far shows the negative relation between the decision making power of a woman within the household and her fertility. A study carried out in 2018 in developing countries that documented childbearing preferences among couples underlined the men usually desire larger family, while women prefer smaller families. According to data collected, in Burkina Faso usually husbands desire an average of 4 children more than women and in Ethiopia the gap in the desired children corresponds to 1.5. These gaps in desired fertility vary a lot from country to country and vary according to the different characteristics of couples. Polygamy is an important factor that influence the desired number of children among couples. In some cases the ideal number of children can vary by five children or more. In many cases, men's preferences seem to matter more than women's ones but when wives are more educated their desire have a greater impact on the realised fertility. Women's participation in fertility related decision making is correlated to women's education since, according to data collected, more educated women have a greater bargaining power in marriage and consequently in fertility decisions. Moving from a patriarchal organised society in which the realised fertility of a couple corresponds to the desired fertility of man alone, to a setting of equal rights and equal decision-making power in which the realised fertility corresponds to the minimum of the woman's and man's desired fertility, there would be a substantial reduction of the fertility rate and a great increase in women's empowerment toward equal gender rights and equal power within the couple.¹⁷⁰

Finally, contraception and population policies are among the factors that impact the most the average fertility level. According to the United Nations' Human Development Report, the right to reproductive health of women is a basic human right. Reproductive freedom is a factor that lies at the basis of self-determination and it involves three aspects of reproduction: the freedom to decide the number and spacing of children, the right to receive an adequate information and the instruments to regulate one's fertility

¹⁶⁹ AFIFI, M., *Lactational Amenorrhea Method for Family Planning and Women Empowerment in Egypt*, in *Singapore Medical Journal*, Vol. 48, No. 8, pp. 758-762, September 2007

¹⁷⁰ DOEPKE, M. and TERTILT M., *Women's Empowerment, the Gender Gap in Desired Fertility, and Fertility Outcomes in Developing Countries*, IZA Institute of Labour Economics, Deutsche Post Foundation, Bonn, Germany, pp. 3-8, January 2018

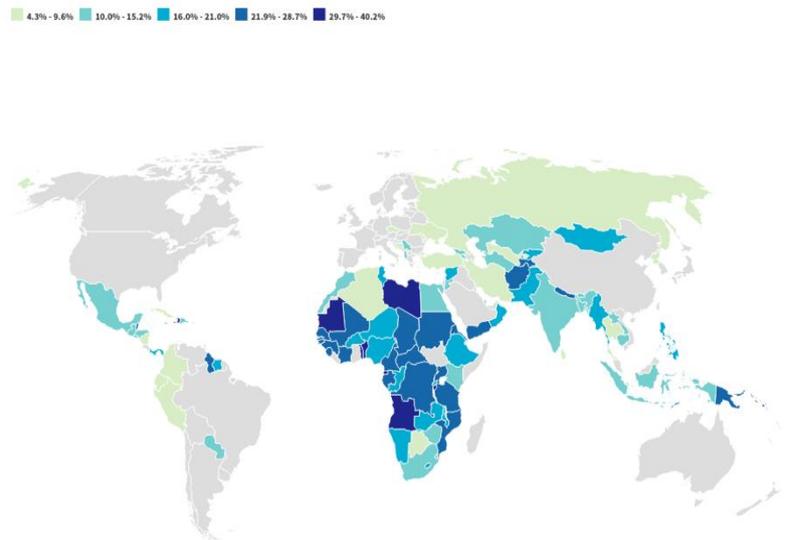
and the right to have full control over own body.¹⁷¹ During the 1960s, the invention of the birth control pill has been fundamental for progressing toward a more egalitarian gender system, in which more independent women could separate the sexual intercourse from childbearing. Similarly, the development in the scientific sphere of more modern methods of contraception and fertility control measures and the correlated decline in the global fertility have been considered as important factors for women's empowerment. As we have already seen, women's education and employment are important factors of women's empowerment that are positively correlated with women's use of contraception. In both developing and developed countries, the decrease in fertility has been possible through the spread of modern contraceptive methods and the increase in their use worldwide. According to estimations made by the United Nations, in 2019, 922 million women worldwide made use of contraceptive methods. The use of contraception rose from 9 percent in 1960 to 61 percent in 2009, and according to United Nation estimations, in 2019, 76 percent of women satisfied their needs for family planning by using modern contraceptive methods.¹⁷² As we have already seen with the case of Egypt, women with less education and women that are less empowered are less likely to use contraceptive methods, and, when they make use of them, it is usually the case of traditional contraceptive methods such as lactation amenorrhea which leads to a higher fertility rate in the household.¹⁷³ However, even if the unmet need for contraception worldwide has consistently reduced thanks to the work of governmental and nongovernmental organisations, the proportion of women who do not desire a pregnancy but do not have any access to family planning methods remains quite high. According to data collected by the United Nations and the World Health Organization, in 2019, an estimated 10 percent of women aged 15-49 worldwide still has their need unsatisfied. Figure 14 shows the unmet need for contraception by country. The unmet need is particularly strong in some Asian countries such as Yemen 28.7 percent, Afghanistan 24.5 percent, and India

¹⁷¹ DIXON-MEULLER, R., *Population Policies and Women's Right's: Transforming Reproductive Choice*, Praeger Publisher, Westport, Connecticut, 1993

¹⁷² *Contraceptive Use by Method 2019: Data Booklet*, United Nations, Department of Economic and Social Affairs, 2019

¹⁷³ AFIFI, M., *Lactational Amenorrhea Method for Family Planning and Women Empowerment in Egypt*, in *Singapore Medical Journal*, Vol. 48, No. 8, pp. 758-762, 2007

12.9 percent. In African countries, the highest rates are touched by Angola and Libya with an average of 40 percent of unmet need and by Mauritania with 33.6 percent.¹⁷⁴



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Figure 14. *Percentage of unmet need for contraception worldwide in 2019. In light green countries with 4.3 to 9.6 percent of unmet need; in green countries with 10 to 15.2 percent of unmet need; in light blue countries with 16 to 21 percent of unmet need; in blue countries with 21.9 to 28.7 percent of unmet need and in dark blue countries with 29.7 to 40.2 percent of unmet need.*¹⁷⁵

However, contraceptive prevalence in developing countries appears to be more efficient toward an overall decrease of the fertility rate if it is accompanied by a family planning policy that aims at educating and shaping the fertility control behaviours of women. In 2007, T. Paul Schultz analysed the long-run effects of population policies on fertility behaviours and on the welfare of women and their families. As he analyses, national family planning policies can, for example, subsidise programs such as sex educational programs and programs that aim at informing couples and women about the

¹⁷⁴ https://www.prb.org/fpdata/#section_1, 2019 *Family Planning Data Sheet*, Population Reference Bureau, PBR Publications, Washington DC, 2019

¹⁷⁵ <https://www.prb.org/international/indicator/fp-unmet-total/map/country/>, Unmet Need, Total, Population Reference Bureau, Washington DC, 2019

best practices in birth control methods. Moreover, governments can also subsidise healthcare services and medical supplies and promote reproductive health programs. By subsidising, contraceptive methods and healthcare services could be offered at lower costs, therefore becoming more accessible to all.¹⁷⁶ Moreover, the governmental propaganda on the use of contraceptive methods can speed up the diffusion of the use of such methods accelerating the decrease in the fertility rate too. Schultz brings the example of a social experiment carried out in Matlab, Bangladesh between 1977 and 1996. The program aimed at analysing and collecting evidence supporting the efficacy of family planning policies to reduce the lifetime fertility level and to improve the welfare of both women and all the other members of the family in the long run. Since 1966, the population of this rural district has been followed by a Demographic Surveillance system (DSS). In 1977, a Family Planning and Health Services Project (FPHSP) has been introduced and maintained for two decades. It was carried on in 70 out of 149 villages in which the DSS was initiated. This program implemented the use of female field workers who had been trained in order to visit all married women in childbearing age of the district every two weeks. Field workers were trained to educate and provide information about childbearing, family planning and birth control methods. Moreover, their implementation could help reducing the time and the costs, perhaps psychic costs too, of undergoing these visits in governmental community clinics since field workers provided women's household with a broad range of methods and instructions for their use, including the most popular injectables. By 1996, an interview on 4 363 households in 70 treatment and 71 control villages has been carried on by the Matlab Health and Socioeconomic Survey (MHSS). Consequent estimations on the fertility and welfare of the villages exposed to the treatment were made in 2005 from the MHSS. Data and evidence collected presented a significant lower fertility rate of the villages analysed, an average of 14 percent fewer children was reported by women. Despite the major decline in fertility, no improvement in girls' education, health and rights was observed and no reduction in child labour, notably girls' labour, was reported.¹⁷⁷ According to my personal opinion, no increase in girls' empowerment was noticed since the FPHSP had as main target to act on the fertility

¹⁷⁶ SCHULTZ, T.P., Economic Growth Centre, Yale University, May 2007, pp.8

¹⁷⁷ SCHULTZ, T.P., *Population Policies, Fertility, Women's Human Capital, and Child Quality*, Economic Growth Center, Yale University, May 2007, pp.31-35

reduction by providing contraceptive methods and instructions on how to use them, while did not target the religious, cultural and social domains in which women lived. Fathers' education, parents' religion and every patriarchal aspect typical of Indian culture, especially in rural districts, should have been considered by the governmental project since it is necessary to cooperate with fathers, husbands and sons in order to reach an exhaustive improvement in women's status.

In 1952, in India, was launched the first official national family planning program and after that, most developing countries adopted similar programs from the 1960s. with regards to family related policies and their effect on fertility, according to Schultz, family planning programs and population control policies can either create and offer incentives to families in order to encourage them to voluntarily lower their fertility, or they can dictate some administrative limits in order to prevent the population from freely choosing their fertility rate. Welfare programs change the balance of benefits and costs of having children by subsidising birth control, increasing the human capital of women or by strengthening the control of women over family resources. This means that family related policies that offer incentives to families to change their fertility affect the income of women and men and change the relative price of children over the lifetime, therefore modifying costs and benefits of having children. Both those two types of population control policies are effective in reducing the total fertility rate of a country. An example of welfare program changing the benefits and costs of having children is the implementation of birth quotas in China. The costs of Chinese birth quotas affect individuals differently and it is difficult to identify the most disadvantaged. However, the less educated, couples living in rural and poor areas or regions can be identified as most penalised by such type of policies. Moreover, the costs for an unplanned birth were fixed at the country level, consequently affecting more the poor and less the richer.¹⁷⁸ For what concerns policies restricting the number of children, both in Vietnam and in China were implemented. Firstly in China, the one-child policy was introduced in 1979 and consequently modified through the Document No. 7 of the Central Government of 1984 in order to allow couples living in rural areas to have a second child, if the first one was

¹⁷⁸ SCHULTZ, T.P., *Population Policies, Fertility, Women's Human Capital, and Child Quality*, Economic Growth Center, Yale University, May 2007, pp.8-13

a daughter. In Vietnam, the Vietnamese government had to face a total fertility rate that was above four children per woman. Therefore, it adopted a two-child policy in 1988. Many doubts were risen since the application of such types of population control policies, especially with regards to birth quotas, affected in unequal measure the population, violated human rights and some authors also argued for the fact that fertility in China and in Vietnam had already started lowering before the implementation of such policies. A similar example can be found in one of the best known and closely studied cases of family planning policies around the world: Taiwan. During the 1920s, a steady decline in the mortality rate started and since then the population rapidly started to grow. The fertility level reached its peak during the 1950s with an average of 7 births per woman. In 1964, was launched the first official governmental family planning program. It was a five-year plan that aimed at reducing the fertility rate from an average of 3 births per woman in 1964, to 2.5 in 1964. Despite the application of this policy the fertility rate had already started decreasing ten years before this large-scale family planning program, similarly to China and Vietnam. It is important to underline that among the possible factors for this early decline in the fertility rate, there are a series of governmental and non-governmental interventions: in the early 1950s, the government issued a pamphlet, *The Happy Family*, which advocated for smaller and wealthier families. Due to the political opposition, this type of propaganda had been stopped. However, by 1954 the China Family Planning Association, subsidised by the government at the time, put in place programs aimed at educating and providing healthcare and family planning assistance to women living in rural areas and in provinces. The wide acceptance of this program by the provincial legislature resulted in the maintenance of this work through the allocation of provincial funds. Between 1951 and 1970, the total fertility rate in Taiwan decreased from 7.5 children per woman to 4. The official national program that was launched only in 1964 was considered a strong program by the Mauldin-Ross' Family Planning Program Effort Index¹⁷⁹. After the implementation of the governmental family planning program, the total fertility rate continued to decline reaching 3.1 births per woman in 1975 and around 2, approximately the replacement level, in 1984. Between 1986 and 1997, it stagnated on an average of 1.7 births per woman until reaching one of the lowest fertility rates

¹⁷⁹ FREEDMAN, R. and BERELSON B., *The Record of Family Planning Programs*, in *Studies in Family Planning*, Vol. 7, No.1, pp. 1-40, Population Council, January 1976

worldwide, with 1.1 children per woman in 2008, except for Hong Kong and Macau that maintain lower fertility rates.¹⁸⁰ The program involved more than 300 female pre-pregnancy health workers who visited women in childbearing age in their homes and provided them with the necessary education on family planning, with information with regards to contraception use and with contraceptives. The agency that supervised this network of trained private doctors who visited women in their homes eventually became the Taiwan Provincial Institute of Family Planning. Moreover, this agency developed a division that monitored and evaluated many aspects of the program, such as the collection of data to evaluate the follow-up surveys on the performance of medical and demographic services, KAP (Knowledge, Attitudes and Practice) Surveys to reveal misunderstandings that could represent obstacles and barriers to possible behavioural changes and to the implementations of activities. Those surveys and researches were useful toward the creation and the implementation of more modern and effective policies that were adapted to possible changes and modifications in social, economic and cultural contexts. The changes in the fertility rate were profoundly affected by changes in nuptiality, since during and after the demographic transition, nuptiality declined significantly. Moreover, Asian societies, including Taiwan, were characterised by a universal and early marriage. The postponement of marriage was one of the key aspects that led to the demographic transition. This cultural aspect changed during and continued increasing even after the demographic transition and the female age for marriage increased from 20 years in 1960 to 28 in 2007. The other key factor was the decrease in the proportion of married women. For example, between 1970 and 2007, the percentage of married women aged 25-29 decreased from an average of 82.8 percent to 31.4 percent. For women aged 40-44, the pattern of nuptiality decline was similar, decreasing from 92.6 to 74.6. Similarly, women of all ages experienced a decline in nuptiality, and this decrease was also accompanied by a decrease in marital fertility. Furthermore, another important factor that contributed to the decline in fertility was represented by the progress in public education and in higher education made in Taiwan. As underlined by the Family Planning KAP surveys carried on during the period of demographic transition on married women of childbearing age, those who strongly benefitted from this increase in the educational level were women.

¹⁸⁰ LEE, M., *Transition to Below Replacement Fertility and Policy response in Taiwan*, in *The Japanese Journal of Population*, Vol. 7, No. 1, pp.71-86, March 2009

Among 1950-1959 women marriage cohorts, the percentage of women with secondary or higher education were less than 10 percent. Differently, among 1985-1986 women marriage cohorts, the percentage increased to 84 percent. Moreover, the process of economic and social development that started in Taiwan during the 1950s produced the decrease in the demand for children: urbanisation and industrialisation rapidly increased in conjunction with an increase in life expectancy and a decrease in infant mortality. The fact that fertility started declining ten years before the implementation of official governmental programs may put into doubt the effectiveness of government's intervention on fertility decline. Many authors suggested that the social and economic development of the country, the diffusion of more modern ideas and the spread of higher education were the main factors that led to fertility decline. However, the strong family planning program and the implementation of incentives and disincentives by the government were necessary to lower contraceptive costs, spread the use of contraception that became universal among women of different educational and social groups and accelerate the decline in fertility. The spread of modern contraceptives continued and reached its highest level during the first fertility transition. It was a fundamental element to reach the fertility decline. After the first demographic transition, since 1970s-1980s, changes in societal norms such as the timing of marriage and the postponement of child bearing jointly with the decrease of married women and the decrease of desired children became the most important factors affecting the fertility rate trend of that period. Some demographers identified this period of changes in childbearing and marriage behaviours as the *second demographic transition* (SDT). The SDT theory identifies changes such as cohabitation, lone parenthood, low fertility and childbearing outside marriage as the relaxation of traditional norms and constraints. This relaxation has been made possible thanks to the emancipation intellectual, economic and traditional modes of behaviour of women. This has been possible through the spread of higher education and the diffusion of more liberal ideas. In Taiwan, women's status was deeply affected during the fertility transition. The progress of women in higher education and their consequent progress in the labour force participation became an instrument to reach higher employment participation, further promoting their occupational careers and raising their wages. Moreover, the increase in women's higher education and the increase in their self-

realisation is intrinsically connected with the increasing rates of celibacy and the postponement of marriage.

During the process of fertility transition, through the process of modernisation of Taiwanese society, Taiwanese women reached a significant increase in their status under many aspects: the number of female college students increased, the gap between men and women among university graduates decreased, female participation to labour force increased and became more lasting, differentials in wages among men and women decreased and increased women's possibilities for career advancement. Moreover, violence against women, especially violence in the family, became prosecutable and legislation provided legal protection of gender equality in employment. In 2019, Taiwan was ranked number 7 according to the latest United Nations' Gender Inequality Index (GII).¹⁸¹ This increasing gender equality brought similar consequences also in Western societies, where women became more independent and self-realised after the fertility transition. In Taiwan, the percentage of married women decreased, thus resulting in an higher celibate rate, and both marriage and childbearing were postponed. Higher rates of women's employment also resulted in the problem of incompatibility between work and childcare, therefore lowering the interest of women to beget. With the increase in educated and professional women, the attraction of married life started decreasing since the traditional family system was and remains even today typically patriarchal. Women, who are submitted to husbands, usually take care of all household chores and childcare. Despite the incredible development that has been experienced in reducing the gap between genders in Taiwan and other Asian countries such as Japan, Korea and Singapore, those societies remain firmly anchored to patriarchal family systems and to the cultural heritage of Confucianism. Those aspects still cause a strong disparity between women and men in family decisions and in fertility related decisions, therefore depriving women to freely decide about birth control and childbearing within the marriage.¹⁸²

¹⁸¹ hdr.undp.org/en/composite/GII, *Table 5: Gender Inequality Index*, Human Development Reports, United Nations Development Programme, 2017

¹⁸² LEE, M., *Transition to Below Replacement Fertility and Policy Response in Taiwan*, in *The Japanese Journal of Population*, Vol.7, No.1, pp.71-80, March 2009

Despite the improvements that have been made on the status of women worldwide, many barriers that both trigger women's empowerment and foster high fertility remain in many countries. Actually, patriarchal cultural norms impact both the overall fertility level and the status of women. Those cultural or ideological norms foster gender inequalities that usually are not perceived as injustices by the subordinate groups. There are two main cultural norms that affect both women's empowerment and contraceptive and fertility behaviours: the preference for high fertility since children are considered as a source of labour and a way for women to raise their status within the family and the society; and the preference for sons as they are considered more productive, better wardens for the elderly and bear the privilege of carrying on the family name. These two cultural aspects are interrelated each other since women decide to beget many children, especially sons, in order to increase their status. The preference for sons heavily impacts the fertility level since couples keep having children, until they reach the desired number of sons. The preference for a high fertility rate, both because children are considered a source of labour and for the status of women, has been widely studied in literature. The status of woman becomes a particularly important factor when women must live in extended households with strangers and do not receive any economic or social support from the natal family. Moreover, without any economic security or any economic aid from the natal family, women must live in insecurity or without respect until when they beget at least one son. High fertility appears to be extremely important specially in developing countries such as in Africa and in Asia where children contribute to labour in peasant families as well as to a variety of other services. As we have already seen, men usually desire higher numbers of children than their wives. Consequently, in patriarchal cultures women have more children in order to please their husbands and to increase their status in the family. A recent study from the Demographic and Health Survey in Africa investigated the factors that influence the desire of men and women to have large families. Data collected showed that the Sahel region has one of the highest levels of fertility in sub-Saharan Africa. On average, the desired number of children by most women is about 5, while in Chad and in Niger it is more than eight. The analysis carried out in the Sahel Region showed that children have a primary role in the family as future providers for the household. Moreover, even in urban and more educated areas, larger families are a symbol of prestige since children represent the honour and the respect

of the family and they ensure the continuation of the family name in society. Children also represent a safety net for parents who, getting older, will need a support in absence of retirement savings or pensions funds. The analysis in this region also underlined the unequal gender relations between the two spouses and the fact that the disadvantaged position of women in society are key factors that influence the access of women to family planning methods and healthcare services. These aspects lead to a fault of opposition on the side of woman in order to limit the family size or even just to express their will with regards to the desired number of children. In addition, the problem of high rate of child mortality in African regions heavily influence the desired number of children since the larger is the number of children, the more will be the children that survive to adulthood. It represents a sort of insurance in a region where high child mortality is the reality. Policies that address women's fertility, women's reproductive health and family planning must take into account the demand-side barriers that are caused by traditions, cultures and religions that shape those societies. They represent challenges that policies should address in order to reduce poverty, to improve economic growth and to reach the desired demographic dividend¹⁸³. A study on family planning policies carried on in regions facing similar population problems such as South Asia, Southeast Asia and the Middle East presented some strategies that produced positive effects: developing a communication both at the social and behavioural level that involved various relevant actors of the society in order to address and change social, cultural and religious norms; the development of a community-based distribution of education and of information in order to inform women about family planning and overcome gender barriers that could be represented by the limited mobility of women, for example; the development of a community based distribution of nutrition to improve child survival and a delivery of child health assistance to help families and women that do not have an adequate child health education; the improvement of girl's education in order to promote their emancipation and their ability to act according to their will. An important aspect of family planning policies that produced significative effects is the involvement of traditional religious leaders in order to provide family planning and women's empowerment messages and to focus on the

¹⁸³ SHEKAR, M., YAZEBECK, A., HASAN, R. and BAKILANA A., *Population and Development in the Sahel: Policy Choices to Catalyze a Demographic Dividend*, World Bank Group, Health, Nutrition and Population (HNP) Discussion Papers, August 2016

health of children and women.¹⁸⁴ The second cultural norm that represents a barrier to the relationship between fertility and women's empowerment is the preference for sons. The issue of gender preference is a consequence of traditional cultural norms that have significant effects on the reproductive freedom of women. Patriarchal cultures are typically those that present a strong son preference and consequently a low level of contraceptive use: the status of women increases according to the number of sons that they beget, consequently, women avoid contraceptive use and couples have children until when they reach their desired number of sons. Those cultural aspects lead to extremely high rates of fertility and to high rates of daughter's mortality during childhood years. Girls who survive must face difficulties such as gender discrimination, limited access to social and economic resources, limited access to healthcare services and instruction and poor nutrition since they are the last to eat in the family circle. Cultures with son preference in India and in other parts of the world such as in Africa as a whole, in Pakistan, in Taiwan, Vietnam, China and Bangladesh present a higher rate of gender disparity in all aspects of life: low level of education, young age at marriage, lack of freedom in contraceptive use, low female labour force participation. The decline in fertility brings a progress toward a more symmetrical gender system in the family, therefore empowering women and giving a higher importance to them within the family unit.¹⁸⁵ According to K. Allendorf, the gender equality within the household increases with the decrease of children. In India for example, with the decrease of the fertility rate, daughters experienced a greater gender equality with a greater freedom and more equal opportunities. Similarly in Pakistan, most respondents to the fieldwork study were indifferent to the sex of their children and in some cases they even preferred daughters. In combination to this son preference decline, both as cause and consequence, also the number of desired children declined further reducing the fertility rate.¹⁸⁶

¹⁸⁴ https://blogs.worldbank.org/health/complex-factors-involved-family-fertility-decisions#_fm, BAKILANA, A. and HASAN, R., *The Complex Factors involved in family fertility decisions*, World Bank, May 2016

¹⁸⁵ PHAN, L., *Women's Empowerment and Fertility changes*, University of Sydney, in *International Journal of Sociology of the Family*, Vol. 39, No. 1/2, pp. 49-75, Spring/ Autumn, 2013

¹⁸⁶ ALLENDORF, K., *Like Daughter, Like son?: Fertility Decline and Changing Gender Relations in Darjeeling, India*, International Center for Research on Women Fertility & Empowerment Working Paper Series, pp.24-29, March 2012

3.6 The need to reposition Family Planning Programs

Family planning services have been fundamental in order to slow population growth by improving reproductive health of women and men and enabling them to choose the number and the spacing of their children. Family planning deserves high priority in the international agenda since the provision of such services is the most direct and effective way to slow population growth. Therefore, by reducing the fertility rate, family planning programs also assisted environmental preservation since population growth threatens fragile ecosystems and exacerbates pollution worldwide. The problem of environmental degradation that is linked to population growth should be addressed as a central issue by governments. The impact on population growth of family planning programs and population policies is clear, throughout the 1960s and the 1980s they contributed to fertility decline for at least 40 percent. Furthermore, this reduction in the fertility rate resulted in an increasing spacing of pregnancies, thus reducing the exposure of mothers and sons associated with pregnancy.

By the end of the 20th century, international interest and funding in support of family planning programs started declining due to a shift in the interest and a broad distrust of rich countries in family planning: Chinese coercive family planning program and the Indian program mainly based on female sterilization appeared to be unsatisfactory. Sub-Saharan Africa still had to start its fertility decline and the Asian national family planning program, mainly focused on married women, appeared to be not applicable in the African context. The decrease in donor funding may represent a big issue for programs in South Asia and Sub-Saharan Africa since, without economic support from the rich countries, they will experience many difficulties to reach the demographic transition, especially in rural countries.¹⁸⁷ After having been neglected during the recent years due to factors such as the HIV/AIDS crisis, nowadays developing countries especially Africa have been taking efforts to reposition family planning as a priority on the national and local agendas. This renewed interest brings that past challenges that governments had already tried facing, since traditional beliefs favouring high fertility, lack of male involvement and religious barriers weakened the efforts made during the

¹⁸⁷ CALDWELL, J., PHILLIPS, J. and BARKAT-E-KUDA, *The future of Family Planning Programs*, in *Studies in Family Planning*, Vol. 33, No. 1, p. 3-10, March 2002

previous years. Those factors together slowed down the efficiency of family planning programs already put in place by governments, consequently leading to a low contraceptive use, a high unmet need and a high fertility rate. New types of programs and new strategies must be employed in order to develop efficient and adequate family planning programs, especially in regions like sub-Saharan Africa and South Asia, where the total fertility rate remains extremely high. Moreover, new types of family planning advocacy efforts must be developed in order to accelerate the demographic transition of several developing countries. The application of programs suitable for the African region that involve the institutional strength of the social organization such as traditional village governance, religious groups and the institutions of extended family will be crucial in order to ensure the success of the future family planning programs. In addition, giving a central role to family planning by increasing its quality, its visibility and its availability will help governments to achieve both health and development objectives in line with the Sustainable Development Goals (SDGs). Family planning programs should focus on the influence of policymakers, community leaders, nongovernmental organisations, the media and health providers. Those audiences are the most influential in ensuring the right commitment to family planning and its success over the long run. Therefore, new strategies should be developed in order to raise the interest of such actors on the issue of population growth and family planning policies, so as to increase their involvement and cooperation in this field.

High level policymakers are those that can ensure adequate resources for family planning and the right quality and political commitment to it. Governments in developing countries generally only allocate less than 1 percent of their budget in investments for family planning.¹⁸⁸ The Abuja Declaration committed African countries to allocate an average of 15 percent of their budget in order to improve the health sector. In Uganda, for example, the government only allocated 0.73 percent to Family Planning during the year 2017/2018. Similarly, Kenya's commitment to family planning decreased from \$6.05 million in 2015 to \$2.93 million in 2017.¹⁸⁹ The involvement of policy makers through the placement of sufficient allocations for family planning and the

¹⁸⁸ FATHALIA, M.F., *Family planning: Future needs, in Population, Natural Resources and Development*, Vol. 21, No. 1, pp. 84-87, Springre, February 1992

¹⁸⁹ ONGWAE, J., *Family Planning Financing: tracking domestic family planning budget allocations at national and sub-national level in Kenya and Uganda*, December 2019

implementation of adequate reforms is fundamental in order to face the challenges that developing countries have in delivering the basic services to their citizens. The geographical and economic barriers are the most prominent. Geographical barriers represent a huge obstacle for people living in rural and remote areas and the economic ones cause troubles to poor people having an extremely low price threshold. Government often concentrate most of the funding in health centres and hospitals located in big city centres, that simultaneously also have to face overcrowding and shortages of trained medical staff. Over the years, many governments in developing countries initiated to reform their healthcare systems in order to decentralise the management of health services by giving more authority to regional and local districts on how resources are raised and spent. Moreover, those reforms also tried to restructure the delivery of healthcare services by concentrating the efforts on primary and preventive health care, including reproductive healthcare. In Brazil, for example, in the mid-1990s reforms tried to create a low-cost preventive service that could be universally available through an organised healthcare system. This comprehensive approach to women's reproductive health became crucial in order to address the increasing inequalities that citizens had to face so as to access to healthcare services. Policymakers restructured the primary healthcare through community-based strategies that pushed the decentralisation of healthcare services. Thus, municipalities became central in controlling and rising funds, also involving the private sector.¹⁹⁰ The implementation of the private sector usually allows to provide services more efficiently and cheaply. Policymakers have the authority and the power to contribute to the improvement and renewal of population and family planning programs. They should work in order to remove unnecessary barriers and promote access to family planning services even to the most disadvantaged. The limited resources allocated to population and health services are among the main factors that hinder the progress toward the demographic transition. Policymakers and governments should renew their interest in promoting family planning, in developing new strategies in order to increase budget allocations also in cooperation with the private sector, and in coordinating family planning effort both at the national and local level.¹⁹¹ An example of successful

¹⁹⁰ ASHFORD, L. S., *New Population Policies: Advancing Women's Health and Rights*, in *Population Bulletin*, Vol. 56, No. 1, p.30, Population Reference Bureau, March 2001

¹⁹¹ *Repositioning Family Planning: Guidelines for advocacy action*, World Health Organization, USAID, 2008

parliamentarian advocacy for family planning is represented by the IBP Kenya Country Team. In 2004, some Kenyan parliamentarian representatives formed a team with the aim of developing a plan in order to reduce the rate of maternal mortality in seven Kenyan districts through the implementation of trained health workers and an articulated logistic plan. The team created a family planning assembly that selected and trained several family planning and reproductive health experts in policy communication to dispose of more effective advocates within the parliamentary staff. The result of this initiative was the incrementation of the national health budget for family planning and reproductive health. Moreover, guided by the parliamentarian health committee, the Kenyan government decided to develop a more equitable access to quality care in order to settle the fertility rate to an equalised low level due to the high discrepancies in the fertility level of the region: in the northeast of the region the ideal family number is nine children and in the Nairobi region is three. However, even being a central issue for the national reproductive agenda and even having increased the share of the health budget for family planning, population growth and reproductive issues still present huge challenges for the Kenyan government.¹⁹²

Empowering community leaders is essential in order to implement policies and programs suitable and sustainable for community's social and religious norms. In addition, they play a central role in promoting the use of family planning services and its benefits by dissipating myths and misbeliefs of the citizens. Empowering community leaders such as religious leaders, political leaders, youth group leaders and healers may improve the overall well-being of individual members of a community. By working directly with the individuals, community leaders have the potential to raise awareness about cultural and social norms that limit the empowerment of women and the ability of women to participate to the household decision making. Making family planning services equitable and available to all in the community will help raising the status of women. Especially in rural areas of Africa, the role of religious leaders remains central and their involvement in enhancing the position of family planning within the community is fundamental especially in patriarchal cultures like the African one. Cultural and social barriers are the main factors that triggers women's empowerment and that explain the

¹⁹² www.familyplanning2020.org/kenya, *Kenya, Commitment Makers Since 2012*, Family Planning 2020

lack of power of women in protecting themselves and enhancing their position. Limited exposure to information or to new ideas, the lack of knowledge of good health practices, the limited physical mobility and control over decisions and economic resources within the household could be partly overcome through a decentralising strategy in which community leaders have an increased authority and can directly participate and promote family planning and gender equality. In such way, family planning programs could become more responsive to local needs and vulnerable groups in rural or isolated areas could profit from health services. An example of successful community participation and development of family planning program is represented by the Special Project with the Bangladesh Agricultural University. The project has been firstly developed and implemented by a local doctor together with the help of the nongovernmental organization Family Planning Association (FPAs) of Bangladesh. Throughout this project assisted women started working in income-generating activities especially in the agricultural and aquacultural context and trained field workers provided them with necessary information regarding the use of family planning. Data collected after some years from the application of such program showed that women involved in the study significantly gained power. Women's life in Bangladesh is traditionally based on a patriarchal structure in which men have a significant control over the mobility and decision making of women. Bangladeshi women traditionally have as primary role the maintenance of the family as social institution and their status is based on their capacity to beget children consequently having a high fertility rate. Women are traditionally dominated by men in all spheres of life, especially in rural and poor areas. In conclusion, programs developed at the local level by any kind of local leaders and adapted to the characteristics of the community can lead to significant improvements in the status of women and in the adoption of family planning measures.¹⁹³¹⁹⁴

Engaging the private sector like voluntary nongovernmental organisations (NGOs) play a crucial role in initiating and developing family planning programs

¹⁹³ ASKEW, I., *Organizing Community Participation in Family Planning Projects in South Asia*, in *Studies in Family Planning*, Vol. 20, No. 4, pp. 185-202, July-August, 1989

¹⁹⁴ RAHMAN, M.H. and NAOROZE, K., *Women Empowerment through Participation in Aquaculture: Experience of Large-scale Technology Demonstration Project in Bangladesh*, in *Journal of Social Science*, Vol. 3, No. 4, pp. 164-171, Bangladesh Agricultural University, Mymensingh, Bangladesh, April 2007

especially in rural areas. Family-planning associations were the first that showed interest in sexual health related issues and in developing governmental and communitarian new goals toward the goal of empowering women. Despite the huge efforts made by nongovernmental organizations still many challenges remain to be faced: many remote areas need to be served by family planning and health programs and quality workable models need to be developed in order to offer an adequate family planning service to all. NGOs have the role of addressing those areas and vulnerable groups in which governmental services are thin or do not exist. Within the international community, NGOs are the best advocates for policy change. An increased NGO-government partnership is needed in order to mold population policies both at the national and local level. The great credibility of NGOs and their significant influence for decision-makers to take action have a pivotal importance also because they can offer the possibility to bring at the political level the expertise of representatives of grassroots organisations. In Morocco, for example, an average of 76 NGOs work on women's and development related issues. The Moroccan government profits from the NGO's know-how through regular consultations.¹⁹⁵ In Africa and Brazil, NGO's played a central role in starting the debate about reproductive health and rights and in reshaping the national health agenda giving a crucial role to such issues. Moreover, NGO's have a huge impact on mobilising the public interest also engaging the private sector, such as the commercial sector like the pharmaceutical or industrial one, in order to contribute in family planning efforts. In a decentralised system where health and social services are organised at lower levels of government, which is a common trend in less developed countries, NGO's and commercial organization can fill the gaps in government-supported services. An example of Public-Private Partnership for family planning is provided by the project implemented by the Mary Stopes International (MSI), a private, non-profit organisations that provides high quality family planning services at the global level. In Papua New Guinea, the Australian Department of Foreign Affairs and Trade (DFAT) and the Marie Stopes Papua New Guinea (MSPNG) developed a partnership jointly with the government of Papua New Guinea. Originally, the MSPNG was directly funded by the DFAT in order to provide family planning services, health and reproductive related services to the Papuan

¹⁹⁵ <https://www.prb.org/reproductivehealthinpolicypracticebrazilindiamoroccoanduganda/>, *Reproductive Health in Policy & Practice: Case Studies From Brazil, India, Morocco, and Uganda*, Population Reference Bureau, February 1, 1999

public. In order to build a relationship with the Papuan Government, MSPNG aligned its strategies to the governmental policies and actions implemented to prevent maternal death and unplanned pregnancy. At the beginning, the government had to face a lack of know-how, experience and capacity to implement such policies. Instead, MSPG demonstrated the value of its services to the government. In order to increase governmental capacity in the application of family related programs, DFAT intervened to develop a contract between the government and MSPG so that the nongovernmental organization could have the possibility to develop the private sector capacity to deliver family planning services by using governmental funds.¹⁹⁶

Finally, a broader use of the Media should be implemented in family planning policies since they represent the most powerful and cost-effective channels of communication that can be used by government, NGOs and other actors in order to reach policy audiences, citizens in general and the civil society. Evidence collected from many studies showed that there is a strict interrelation between the exposure to mass media messages on family planning and the influence on contraceptive behaviour that such messages cause. Women and couples that are more exposed to mass media messages on family planning are more likely to use contraceptives and to desire fewer children. Moreover there is also a strong positive relationship between the intensity of the exposure to such messages and the reproductive behaviours.¹⁹⁷ Mass media are generally recognised by the population as a credible source of information and they have the capacity to increase the level of knowledge with regards to family planning methods. Moreover, they represent an effective way to raise awareness about the risks involved in not practicing fertility control such as adolescent pregnancies, sexually transmitted infections, mother and child death, abortions. Consequently, mass media can be used together with social marketing in order to promote reproductive health. Despite the huge importance of mass media in family planning campaigns and the benefits that their implementation may involve, studies showed that their implementation do not always produce effective results. Despite the high level of awareness raised through the

¹⁹⁶ MANGONE, E. and GITONGA, N., *Public-Private Partnership for Family Planning: Case studies on Local Participation*, Primer, Bethesda, MD: Sustaining Health Outcomes through the Private Sector project, 2017

¹⁹⁷ WESTOFF, C.F. and RODRIGUEZ, G., *The Mass Media and Family Planning in Kenya*, in *International Family Planning Perspectives*, Vol. 21, No. 1, pp. 26-31, Guttmacher Institute, March, 1995

implementation of mass media messages as part of the family planning strategy applied in Nigeria, in some rural communities the adoption of fertility control methods remains low. This situation was attributed to the cultural and patriarchal context that promoted large family size and the need to have a high number of male children. Consequently, the importance of mass media cannot be ignored in the pursuit of an increased reproductive health and maternal health in Nigeria.¹⁹⁸ Nevertheless, media such as newspapers, the internet, television, radio and magazines should try to not merely provide information and raise awareness about family planning contraceptive methods, but new strategies should be designed and implemented in order affect the some basic cultural aspects that influence the fertility rate. For example, a new concept of family could be introduced and developed, like in the case of Brazilian telenovelas, or the traditional patriarchal structures could be reversed by promoting an increased gender equity within the household and offering images of emancipated and educated women who participate to the workforce and to the household decision making. Governments in developing countries should focus on improving the quality of mass media messages with regards to family planning and women's empowerment. Moreover, mass media should promote the importance of education and the need for women to improve their educational attainment as it is one of the main factors that influence the quality of life of women and reduces the overall level of fertility.

¹⁹⁸ AJAERO, C.K., ODIMEGWU, C., AJAERO, J.D. and NWACHUKWU, C.A, *Access to mass media messages and use of family planning in Nigeria: a spatio-demographic analysis from the 2013 DHS*, in *BMC Public Health*, Vol. 16, No. 1, p.1-10, 2016

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