

# **FAMILIES AND MEGATRENDS - the impact of NEW TECHNOLOGY and CLIMATE CHANGE**

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The scope of this paper covers 4 areas following an INTRODUCTION

1. THE FAMILY
2. NEW TECHNOLOGY
  - 2.1. Impact on the family overall well-being
  - 2.2. Impact on health
  - 2.3. Impact on sexual reproductive health (SRH)
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3. CLIMATE CHANGE
  - 3.1. Impact on the family overall well-being
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4. LINKING TECHNOLOGY TO CLIMATE CHANGE

### **INTRODUCTION – The bog picture / the linkages**

There is considerable evidence on linkages between

1. Megatrends and family - The impact of megatrends (migration, urbanization, technology, climate change and demographic changes) on the family (structure, dynamics, practices). This is conceptually easy to understand and the evidence of linkage is obvious
2. Megatrends with each other - Conceptually, this is less easy, and the strength of evidence of the linkages is variable. Some are well-established, for example climate change can be a reason for migration, migration inevitably leads to urbanization, technology can be used to solve many of the problems posed by these megatrends.

This paper focuses on TWO of the megatrends that affect family – NEW TECHNOLOGY and CLIMATE CHANGE, and it attempts to describe

- the impact of new technologies on the family; and suggest strategies for optimizing the benefits of technology and minimizing its drawbacks, and
- the impact of climate change on the family, both directly or indirectly and suggest strategies for minimising the impact of climate change on the family

The impact is described in four aspects relevant to the family - overall well-being, general health, sexual reproductive health (SRH) and the role of gender. Finally, it is pertinent to note that there is a direct link between these two megatrends - technology and climate change

### **1. THE FAMILY**

For the purpose of this session, only four salient points about family are to be note

- (i) Malaysia (and presumably all other countries) has a NATIONAL AGENCY for family development - the National Population and Family Development Board or LPPKN
- (ii) In Malaysia, there is a NATIONAL POLICY ON THE FAMILY with a Plan of Action<sup>1</sup>.
- (iii) A healthy family is one in a state of “complete physical, mental and social well-being and not merely the absence disease and infirmity”.
- (iv) Family wellness can be measured by the INDEX OF FAMILY WELL-BEING<sup>2</sup>. This state of can change by factors including the megatrends that we are discussing today

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<sup>1</sup> This policy has recently been reviewed and updated, and is being finalized

<sup>2</sup> The INDEX is derived from measurements of 8 domains of well-being. For Malaysia, the most recent report (2019), gave a “high” index at 7.55 (highest is 10)

## 2. NEW TECHNOLOGY

We cannot imagine life without technology and new technology, especially information technology. Digital technology has left an incredible impact on our lives. In a study among millennials, 87% state that their smartphone never leaves their side, with 80% check their smartphone first thing in the morning and 88% use the camera weekly<sup>3</sup>. The positive and the negative impact of technology is well-known. The situation is often graphically expressed by the adage “*the good, the bad and the ugly*”. It is however impossible to assess the amount of the *good, the bad and the ugly* that new technologies bring about. The access to knowledge is a good example – there is good useful knowledge, but there is also useless, inaccurate, age-inappropriate and even dangerous knowledge

### 2.1. Impact of new technology on the family overall well-being

The influence of new technologies on the family is well-known, and it is experienced (or at least observed) by everyone and every family, and is a common topic of conversation. Unlike climate change, the link between technology and the family is direct and straight-forward, without passing through other megatrends such as migration and urbanization. There is however a link between new technology and another megatrend - population ageing (bringing about the generation gap and how this is made wider by technology especially digital technology). The changes brought about by new technologies in the family dynamics are so well-known, and the following are some aspects of family dynamics that can be negatively affected

- a. Social skills
- b. Family time and bonding
- c. Parent-child relationship, digital relationship
- d. Means/channel/pattern of communication
- e. Independence of children, less control by parents
- f. Influencers of children
- g. Conflict in family – eg sharing gadgets and screen time
- h. Widening of generation gap (parent’s digital ignorance, children very knowledgeable)
- i. Educational performance of children (can be positive with access to useful knowledge)
- j. Cyber-safety and cyber crimes
- k. Health (physical, mental, emotional, social) – see next section

### 2.2. Impact on health

This is one aspect where the adage “*the good, the bad, the ugly*” really applies. Human health over the ages has benefitted tremendously by a host of technologies. More recently, ICT has been exploited, as in Telemedicine. As to the “*bad and ugly*”, the use of technology can affect both our physical and mental health, as follows

- a. Sedentary lifestyle - Technology encourages a sedentary lifestyle. Many people work at a computer all day and then go home to use some form of technology for various purposes

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<sup>3</sup> Article titled *Nursing Made Incredibly Easy!* 14(4): July/August 2016. *Is technology affecting our health?* Murphy, Kathryn DNSc, NP

- b. Sleep problems - Prolonged electronic book reading can cause eyestrain and fatigue, and interfere with sleep patterns. Sleep deprivation can also be caused by anxiety about missing a call or text, staying up later to use devices, and interruptions in sleep due to calls and texts.
- c. Vision problems - Close computer work can cause dry eyes, light sensitivity, double vision, fatigue, and headaches.
- d. Hearing problems - Teenagers and young adults are most at risk for hearing loss from the use of earbuds or headphones with personal audio devices.
- e. Neck/back strain - The use of smartphones, computers, tablets, and other devices can contribute to severe neck strain.
- f. Text thumb - The repetitive gripping motions used while texting or video gaming results in constriction of the flexor tendon in the thumb, which can cause painful snapping
- g. Mental health effects - Mentally, technology can shorten attention spans, contribute to increased anxiety and narcissism, decrease capacity for emotional intelligence. Use of screen-based devices can produce changes in nerve cell behavior, which influences memory. Attention spans are shorter, personal communication skills are reduced, and the ability to think abstractly is decreased
- h. Emotional instability - Increased use of social media may lead to a decrease in emotional intelligence. Studies have shown that empathy and long-term relationship are less among social media users
- i. Use of internet can be addicting - symptoms of Internet addiction include a preoccupation with internet games or activities, withdrawal symptoms when not engaging in these activities, lying to others about the amount of internet usage, interference with a person's activities of daily life such as work or relationships, and using the activities to relieve anxiety

### **2.3. Impact on Sexual and reproductive health (SRH)**

Here we are mainly talking of “old” technology, and less on the “new” digital technology. “Old” technology has played a very significant role in family planning, in diagnostic and treatment modalities for pregnancy, childbirth and women’s health. Technological advances for assessment and maternal/fetal care during birth include electronic fetal monitoring, ultrasonography, blood pressure screening, maternal/fetal pulse oximetry, and many more

However one area that deserves special mention especially in the context of the family as it relates to the population – fertility control and fertility enhancement. Family planning, introduced in Malaysia in early 1960s has seen impressive progress in the methods of contraception. But what is becoming increasingly relevant today, especially to countries like Malaysia where fertility is rapidly declining, is the role of Assisted Reproductive Technologies (ART). A growing number of couples (around 15%) in Malaysia encounter fertility problems. ART includes all fertility treatments in which either eggs or embryos are handled. Basically, ART treatments include in vitro fertilization (IVF), embryo transfer (ET), and gamete intrafallopian transfer (GIFT).

### **2.4. Technology and gender**

Technology often gets equated with “men's power,” while women and girls are portrayed as less technologically skilled and less interested. First of all, equipment tends to be gender-typed. There are machines and tools suitable for men – saws, trucks, wrenches, forklifts – and those suitable for women - vacuum cleaners, typewriters, food processors. It is important to acknowledge that technology especially digital technology, is a powerful tool that can serve as a catalyst for promoting and achieving gender equality.

### **2.5. What can be done?**

There is already a lot of information on how families can optimize the *good* of technology and minimize the *bad* and the *ugly*. Actions can be taken by family members and heads of families or parents. On the overall well-being and health of the family, the following are some suggestions

- a. Limit screen time
- b. Limit gadget zones – eg not in dining room
- c. Parents control access to internet sites – eg no pornography
- d. Regular checks on history of usage
- e. Assign specific time/day for face-to-face interaction
- f. Organise events that do not involve new technologies – sports, games, picnics, hiking, movies, karaoke, reading books (not online)
- g. Inform and educate family members of the potential health hazards of technology overuse
- h. Look out for early symptoms of health impact like poor posture, hearing and sight, and signs of mental disorder
- i. Encourage digital detoxification (this is a period of time when a person voluntarily refrains from using digital devices such as smartphones, computers, and social media platforms)
- j. Educate family members on the harmful health effects of overuse of technology - reduced quality of sleep, eye strain, vision problems, posture, increased occurrence of migraine headaches, exposure to radiation
- k. Parents to be role model

How about banning smart phones at all for children? On 17 Feb 2014, *The Guardian* had a headline “*It went nuts –thousands join UK parents calling for smart phone-free childhood*”. A local WhatsApp group started by two mothers concerned about online safety attracted more than 4,000 members. This is counterproductive – by eliminating the “bad and the ugly”, the “good” is eliminated as well

On technology and SRH, there is need for

- a. Conduct research and learn from other countries on how to optimize modern including digital technology to improve maternal and child health and SRH
- b. Optimise digital technology for follow up and tracking of clients (users of SRH services, victims of gender-based violence)
- c. Look for better technologies - eg for better screening and diagnostics for diseases of the reproductive system, including cost-effectiveness studies<sup>4</sup>
- d. Find better and more affordable treatment modalities for infertility and subfertility<sup>5</sup>

On technology and gender, in an article<sup>6</sup> the following are suggested

- a. Design technological innovations that appeal to women and can benefit women
- b. Ensure there is a gender balance in the telling of the history of technology advancement
- c. Encourage older women to mentor younger women pursuing careers in technology
- d. Offer women and girls opportunities such as internship
- e. Tailor programs towards the well-being of girls and women in society,

**The role of government** – This include giving public awareness using all possible media on the good and the bad of technology, formulation of policies such as pricing policy for various technologies to ensure equitable access, control of the internet (this has been done by several governments for some purposes), and promulgation of laws such as for cyber security

### 3. CLIMATE CHANGE

#### 3.1. Impact on the family overall well-being

An article posted in July 2021 says that there has been an 83% increase in climate-related disasters in the last 20 years. These disasters have ripped up homes, destroyed food supplies and

<sup>4</sup> In 2022, UNFPA Malaysia conducted a study on the value of investing on four SRH interventions (Comprehensive sexuality education, family planning, family support policies esp child care and prevention of cervical cancer) , measured by Return on Investment (ROI) – all are cost-effective, with positive ROIs

<sup>5</sup> The government has approved budget for the setting up of a National Subfertility Centre by LPPKN, which will improve and strengthen the current services provided by LPPKN

<sup>6</sup> Five ways to advance gender equality through technology and innovation, by Ja Nigeria (March 8, 2023),

displaced millions of people. In 2020 alone, 30 million people were displaced due to climate related extreme weather events<sup>7</sup>. Experts forecast that if we continue to see climate related extreme-weather events increase at the same rate, the world faces losing nearly 167 million homes by 2040

Climate change has a direct impact on families – we see the disaster brought on homes by floods, hurricane, tsunamis etc. Drought can bring untold misery to the livelihood of families. Human habitat loss is one of the major impacts of climate change - an average of nearly 42 million people per year will face the loss of their homes due to climate change events in the next 20 years; and if extreme weather events continue to increase at current rates, we face losing 8.35 million homes a year between now and 2040. That's 167 million homes<sup>8</sup>. The physical destruction and loss of homes have a myriad of social, health, economic consequences on the family.

There is also the indirect impact – notably through migration. Floods, hurricane, tsunamis and drought are valid reasons for individuals and families to migrate elsewhere. And these migrants have an influence on the lives of existing local families in the place they migrate to – positively (as extra labor force, or customers of local businesses), but largely negatively (over population, sharing of existing resources which already could be scanty, including jobs, and problems associated with a different culture including language)

### **3.2. Impact on health**

Here we will see the overall big picture – not specifically on the family. Almost all domains of human health are potentially impacted by climate change - communicable disease (eg vector borne disease), non-communicable disease (especially due to pollution), mental and psychological health. In fact, the climate crisis is the biggest health threat humanity has ever faced. The WHO predicts an estimated 250,000 additional deaths per year from heat stress, malnutrition, dengue, malaria, and other vector-borne diseases between 2030 and 2050<sup>9</sup>. Climate change has a disproportionate impact on the poorest and most vulnerable communities. There is a need to prioritize R&D for medicines, vaccines, and diagnostics for climate-sensitive diseases. However, currently, medical and pharmaceutical ecosystem focuses on more profitable markets, resulting in inequitable development of and access to these technologies.

### **3.3. Impact on sexual reproductive health (SRH)**

Unlike technology, the impact is all negative. Environmental disasters like floods and hurricanes jeopardise access to health including SRH services. After the Nargis cyclone<sup>10</sup> hit Myanmar in 2008, there was increased number of maternal deaths, and child health was badly affected. However, an area that has generated a lot of interest is climate change and fertility. Two trends are being observed. The first is simple and expected – it is logical to assume that global warming might directly affect fertility - hot weather could affect sexual behavior. Also, temperature could negatively influence reproductive health factors such as sperm motility and menstruation. The second trend is less simple and indirect - climate change has led to a reduced desire of couples to have children. The reasons cited for this are

- a. Fear of not getting care during pregnancy and childbirth during environmental disasters
- b. Fear of not being able to care and provide for children disasters and a bigger world population
- c. Anxiety over children inheriting a planet damaged by climate change
- d. Not to be a contributor to world population - more people means more polluters
- e. Political reason – to avoid having children who may detract parents from environmental activism

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<sup>7</sup> <https://reliefweb.int/report/world/climate-crisis-destroy-167-million-homes-next-20-years>

<sup>8</sup> *ibid*

<sup>9</sup> Confronting the effects of climate change on human health – <https://dndi.org/advocacy/confronting-climate-change/>

<sup>10</sup> Nargis was an extremely severe cyclonic tropical storm, that was destructive and deadly that struck Myanmar in May 2008, it caused the worst natural disaster in the recorded history of Myanmar

### 3.4. Climate change and gender

Girls and women do not experience climate change in the same ways as boys and men, due to historical and structural gender inequalities — which also affect how, and to what extent, girls and women can lead, make decisions, take action, and advance solutions to combat climate change. An article by UN Foundation – *Five Facts About Gender Equality and Climate Change (March 2022)* identified the following issues

1. Women face disproportionately high health risks from the effects of climate change.
2. Gender-specific threats are used to silence female environmental leaders
3. Women face barriers to leaving areas prone to climate change and natural disaster
4. Women are excluded from decision-making spaces and climate change negotiations
5. Female-led groups do not receive sufficient climate funding.

### 3.5. What can be done?

As for new technologies there are things that individuals and families can do to combat climate change. An overall response is we must reduce our carbon emissions and environmental footprint (the family has a direct role), and make the RRR as our way of life - (**R**educe, **R**euse, **R**ecycle). We are already doing some if not all of the following, and if we are not, we should try to

- a. Separate our trash for recycling, and reuse and recycle
- b. Take a reusable tote bag to the grocery store
- c. Refill a water bottle rather than buying a disposable one
- d. Save energy by using LED bulbs instead of standard light bulbs.
- e. Turn off appliances not in use
- f. Reduce the brightness of computer screens
- g. Buy local produce (delivery of imported goods involve using a lot of energy)
- h. Buy loose rather than pre-packed (especially plastic packed or wrapped)
- i. Buy only what we need, not the economic size, reduce waste
- j. Eat less meat and dairy
- k. Walk instead of drive (work from home is an option)
- l. Try to lessen need for flying
- m. Use renewable sources of energy – sunlight and wind are the most commonly used

On climate change and health and SRH

- a. Generate more awareness, knowledge on climate change and health, be creative<sup>11</sup>
- b. Develop treatments for climate-sensitive diseases
- c. Increase sustainable R&D and manufacturing
- d. Advocate for innovation for neglected patients in the climate change response

On climate change and gender, in an article<sup>12</sup>, three strategies are suggested to improve the gender inequality in climate change actions, for which the role of the family is clear

- a. Promoting gender equality at the household level
- b. Empowering households with time-saving technologies
- c. Encouraging women's participation in leadership roles

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<sup>11</sup> UNDP has made a very creative advertisement showing a dinosaur giving a speech in UN warning humans about becoming extinct, which will happen if climate change is not arrested

<sup>12</sup> <https://coffeeandclimate.org/climate-change-and-women-disproportionate-impact-and-solutions> - Climate Change and Women: Disproportionate Impact and Solutions

**The role of governments** - Almost all experts agree that governments —not just individuals or private businesses - play a critical role. However, they disagree on the most effective options to address the problem. Some examples of what government can do are

- a. Carbon taxes - By attaching fees to emissions, carbon taxes encourage people, businesses to emit less. The revenue generated from these fees can be used to pay for social programs, invest in clean energy, or lower taxes for the public.
- b. Cap and trade – This is a government program designed to limit (or cap) private-sector greenhouse gas emissions. Governments allocate or sell a set number of permits, each of which represents the right to emit a specific amount of greenhouse gases. If a company needs more permits to make its product, it has to trade with another company to buy them. So, as with a carbon tax, companies directly pay for their pollution.
- c. Clean energy standards – These rules encourage utility companies to generate a certain percentage of their electricity from low-emission energy sources, such as solar or wind power.
- d. International agreements - Over the past three decades, countries have worked together to through international agreements such as the Kyoto Protocol. However, these agreements have varied effectiveness, with countries disagreeing on goals for emissions reductions and rules on how to enforce emissions cuts.
- e. Adaptation policies – These are aimed at making cities, states, and even countries less vulnerable to these disasters. Eg - creating evacuation plans, building roads and bridges that can withstand rising sea levels and extreme weather conditions, building public parks that can absorb and store water in the event of floods.
- f. Minimizing financial risks of climate change - To avoid future financial instability, policies can be formulated to prepare for climate-related economic shocks. Eg - mandating that all citizens have access to fire insurance, requiring that banks disclose whether climate change has the potential to affect their investments
- g. Technology investment – Investing in R&D for cutting-edge technologies that can reduce greenhouse gas emissions. One major area is identifying renewable energy
- h. Offsets, and measuring carbon footprint - A *carbon offset* is a credit that a person/organization can buy to decrease its carbon footprint. When the number of carbon offset credits obtained is equal to an individual/organization's carbon footprint, that person or organization is carbon-neutral. Thus it requires measuring the *carbon footprint*, using carbon footprint calculator. Not surprisingly, this generates controversy – it amounts to giving permission for some people/organisations – who can afford to buy - to pollute the environment

#### **d. THE LINK BETWEEN TECHNOLOGY AND CLIMATE CHANGE**

Modern and cutting-edge technologies may be the answer to solve the problems associated with climate change. Artificial intelligence (AI) is increasingly being used to combat climate change. Directly of benefit to family is the use of technology to predict weather patterns and climate disasters, so communities and authorities can better plan how to adapt to climate change and mitigate its impact. There have been use of AI in specific areas - improving access to clean energy, implementing proper waste management systems and encouraging reforestation. Other uses reported are in measuring and monitoring the rate that icebergs are melting, mapping of deforestation, recycling of more wastes, cleaning up the oceans and helping industries to decarbonize