




**PHILIPS**

Fabric of Africa

# Breastfeeding in urban Africa

Toward empowering working mothers  
through innovation



“At Philips, we strive to make the world healthier and more sustainable through innovation.”

Frans van Houten



## Foreword

At Philips, we strive to make the world healthier and more sustainable through innovation. Our goal is to improve the lives of 3 billion people by 2025. In line with this ambition, we have pledged to support the UN's Every Woman Every Child initiative and committed ourselves to improve the lives of 100 million women and children by 2025, in particular in those areas in Africa and South- and East Asia where maternal and child mortality is concentrated and nutrition challenges are most acute.

We will deliver on our commitment by supporting countries with large-scale and inclusive transformations of their healthcare infrastructures, by developing innovative solutions for healthier and safer living, and by promoting healthy and nutritious diets for mothers and children and researching barriers to breastfeeding for working mothers.

The study described in this report addresses the last point. Breastfeeding helps reduce child mortality, yet significant barriers exist that threaten mothers' ability to optimally breastfeed. Whenever we create innovations, we make sure we do so based on a deep understanding of people's needs and aspirations in their socio-cultural context, in order to make sure that our solutions are locally relevant and valued for addressing their key needs. As this report shows, the barriers depend on different situations of different mothers. The issues are diverse – and so is the range of answers needed.

Armed with this insight, the team will push ahead and create solutions for barriers that we can address with our technology and services. And we'll gladly share our insights and work with other public and private actors on areas where they can make a contribution. In this way, by acting together on a joint and evidence-based vision, we will create a better environment for young mothers to combine a working life with giving the best care to their newborns.

We look forward to continue and extend our working together with the various UN organizations and other societal stakeholders in order to achieve the impact and scale needed to deliver on the ambitions of initiatives like Every Woman Every Child and the upcoming Sustainable Development Goals.

**Frans van Houten**  
CEO Philips

# Welcome

Welcome to our 2015 Fabric of Africa report, in which we present the research done by the Philips Africa Innovation Hub, supported by research agency Dr. Monk, to better understand the barriers to breastfeeding that mothers in Africa are facing when they return to work.

We would like to offer our special thanks to all members of the international Advisory Group that was formed to provide guidance during this research project. With stakeholders from the United Nations, development agencies, civil society and academia, the group provided invaluable advice to ensure that the project is fully aligned with public health goals. We are particularly pleased that this multi-stakeholder conversation led to the establishment of the new Breastfeeding Innovation Team, recently formed by the MDG Health Alliance. This Team is growing fast, as more organizations join forces to accelerate the innovations that will empower more mothers in low resource settings to breastfeed.

At the Philips Africa Innovation Hub we have started to develop several innovative ideas that were inspired by the findings in this report. Hopefully, these innovations will prove effective to break some of the barriers to breastfeeding faced by mothers. We believe this is an area where Philips and others can create shared value. If we can craft business innovations to address the challenges, we can reach millions of mothers and make a massive positive impact on child health, child development and women's empowerment.

## Maarten van Herpen

Head of Philips Africa Innovation hub

## Victoria Davies

Director Medical Affairs,  
Philips Mother and Child Care



“The Philips’ report shines a light onto the widening chasm between breastfeeding rhetoric and reality.”

Leith Greenslade

## Foreword **Leith Greenslade**

Nature has empowered mothers with control over the production and distribution of an extraordinarily protective substance for the health and development of their children – breastmilk. This evolutionary innovation protects children from infectious diseases, substantially reducing the risk of sickness and death, and supports brain development. Importantly, breastfeeding is an affirmative action policy for children living in high-risk environments as they disproportionately benefit from its protective properties. And unlike the vast majority of health interventions, breastmilk is wholly owned and operated by mothers. All that societies need to do to unleash the protective power of breastmilk is to ensure that mothers have the freedom to provide their children with breastmilk, unfettered by external barriers. And that is where almost all societies are failing...

Just four out of every ten babies in the world today are breastfed right after birth and exclusively for the first six months of life. Because of this, 800,000 children die each year who could otherwise be saved with breastmilk, and there are many hundreds of millions more episodes of sickness that could be prevented. Despite decades of effort, there has not been much improvement in the global rate of breastfeeding, but where specific countries have made progress (e.g. Bangladesh, Ethiopia and Malawi), child deaths have plummeted. In fact, unlike most areas of health, developing countries have outperformed developed countries in rates of breastfeeding and the world has much to learn from their efforts.

The current Philips' report, *Breastfeeding in urban Africa: Toward Empowering Working Mothers Through Innovation* sheds even more light. The problem is not that mothers don't know that it is better to breastfeed their children. The vast majority of the 400 Kenyan and Ghanaian mothers surveyed know that breast is best, and yet it is a minority of mothers in both countries who exclusively breastfeed. Probe deeper and the mothers reveal a raft of barriers to breastfeeding, most common among them the need to return to work. The Philips' report shines a light onto the widening chasm between breastfeeding rhetoric and reality for these working mothers. The world keeps instructing them to breastfeed early and exclusively when the realities of daily working life in urban Africa make it increasingly impossible. These mothers face a particularly toxic

trade-off when it comes to breastfeeding or working, as their children continue to face a high risk of mortality as their incomes rise and their capacity to breastfeed falls. What can be done?

**Enter innovation, with its promise of creative solutions to intractable problems.**

Philips and others will use these research insights to develop breastfeeding supportive technologies that target the major barriers to breastfeeding in hospitals, homes and workplaces. Human milk banks in hospitals, breast pumping, pasteurization and storage facilities in workplaces and daycare centers, and cash and non-cash incentives directed to breastfeeding mothers should all be on the table. The Philips Africa Innovation Hub is already testing several promising innovations that were inspired by this research. And who will pay? As the benefits of increased breastfeeding accrue to governments, employers, and parents, all should share in the costs, with any subsidies targeted to those families least able to pay and whose children face the highest risks from low breastfeeding rates.

We are at the dawn of a new development age – the Sustainable Development Goals – when new strategies will be needed to reduce preventable newborn and child deaths to zero and eliminate child malnutrition by 2030. With UNICEF's new Global Breastfeeding Advocacy Initiative, supported by the Bill and Melinda Gates Foundation, and unprecedented financial support available through the Global Financing Facility for Every Woman Every Child, the stage is set for impact. In this new environment, solutions will invariably come from new actors and impact will be determined by the ability of governments, the UN, companies and civil society to work in shared value partnerships. The ultimate goal is to create a world where breastfeeding mothers have the freedom to breastfeed, because as the Philips' research unequivocally demonstrates, breastfeeding is not just about child survival, it is fundamentally about mother empowerment.

**Leith Greenslade**

Vice Chair | MDG Health Alliance | Office of the UN Special Envoy for Financing the Health MDGs  
[www.mdghealthenvoy.org](http://www.mdghealthenvoy.org)

# Executive Summary

The importance and impact of breastfeeding on child health is well documented. Following our pledge to support the UN's Every Woman Every Child initiative, Philips – supported by research agency Dr. Monk – set out on an exploratory investigation to uncover the barriers to breastfeeding that urban working mothers in Ghana and Kenya face.

We spoke directly to 400+ working mothers with children under two years of age, through personal interviews, focus groups and surveys. Mothers were representative of three distinct socio-economic groups: Base of the Pyramid, Floating Class and Middle Class (Chapter 2).

Through our findings, the picture emerges of a deeply felt responsibility toward the health of the baby, tempered with the realities of urban African life. Limited early initiation of breastfeeding, unsupportive work environments, lack of access to breastmilk expression facilities and impeding beliefs are among the challenges we identified (Chapter 3).

Barriers to breastfeeding are often a combination of unsupportive social, economic, cultural or political environments (such as lack of expression spaces at work) and low access to a technical enabler (such as a breast pump). Therefore, opportunities to lower barriers to breastfeeding are expected from joint efforts by industry, government, and civil society, addressing the diverse set of barriers in a united way. Strategies that contribute to women moving forward in steps along the breastfeeding continuum – from 'no' to 'partial' to 'predominant' to 'exclusive' breastfeeding – are key, as with every step they can have a significant positive impact on child survival and health. To highlight potentially impactful directions for breastfeeding supportive innovations, we developed a Breastfeeding Innovation Matrix (Chapter 4).

The end goal is to empower working mothers in Africa through tailored breastfeeding supportive innovations – in products, services and education – enabling them to combine going to work with giving their child the health benefits that only breastfeeding can provide. A single solution will not solve all the challenges mothers face; the uniqueness of their lives and the barriers they face need to be acknowledged to develop effective solutions.

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# 1. Introduction

The purpose of the current report is to provide insight into why urban working mothers in Ghana and Kenya have difficulties breastfeeding at recommended levels (Chapter 3), and to identify innovation opportunities to support and empower them (Chapter 4).

## Breastfeeding and child health

The profound impact of breastfeeding on child health and development is well known. Immediate and exclusive breastfeeding provides children with nutrition, increases immunity, protects against infection, and helps prevent contamination caused by sources such as poor quality drinking water. Compared to alternatives such as formula and porridge, breastfeeding also supports optimal brain development, helps reduce the risk of certain non-communicable diseases, and contributes to maternal health.

In fact, breastfeeding gives children below the age of 5 years a 14 times greater chance of survival. They are 15 times less likely to die from pneumonia and 11 times less likely to die from diarrhea (source: Improving Child Nutrition, UNICEF 2013). It is estimated that more than

800,000 children's lives could be saved each year if every child was breastfed within an hour of birth, given only breastmilk for the first six months of life and breastfed regularly for the first two years (source: The Lancet Maternal and Child Nutrition Series, The Lancet 2013). The decisions by mothers whether to breastfeed or not, and how often to breastfeed, are particularly critical in countries struggling with high rates of infectious disease and child mortality.

## Ghana and Kenya: the numbers

Zooming into Kenya and Ghana, the countries where we conducted our research, we see high numbers of child deaths. In 2013, an estimated 106,000 children died in Kenya and 62,000 children died in Ghana (source: Committing to Child Survival: A Promise Renewed Progress Report, UNICEF 2015). Malnutrition was an underlying cause of almost half of all child deaths in both countries. For many of the leading causes of child mortality, such as pneumonia and diarrhea, an obvious preventative measure is a very simple one – breastfeeding.

## Child mortality rates are high for all Kenya urban households especially in the bottom 80%

Deaths per 1,000 live births

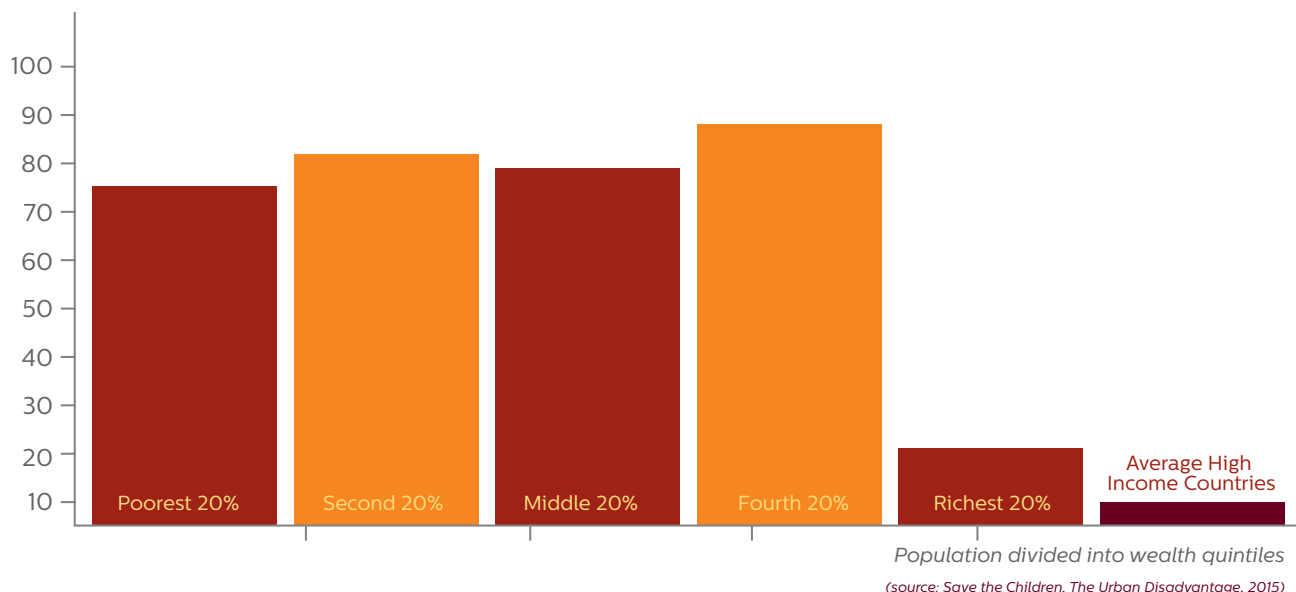


Image 1

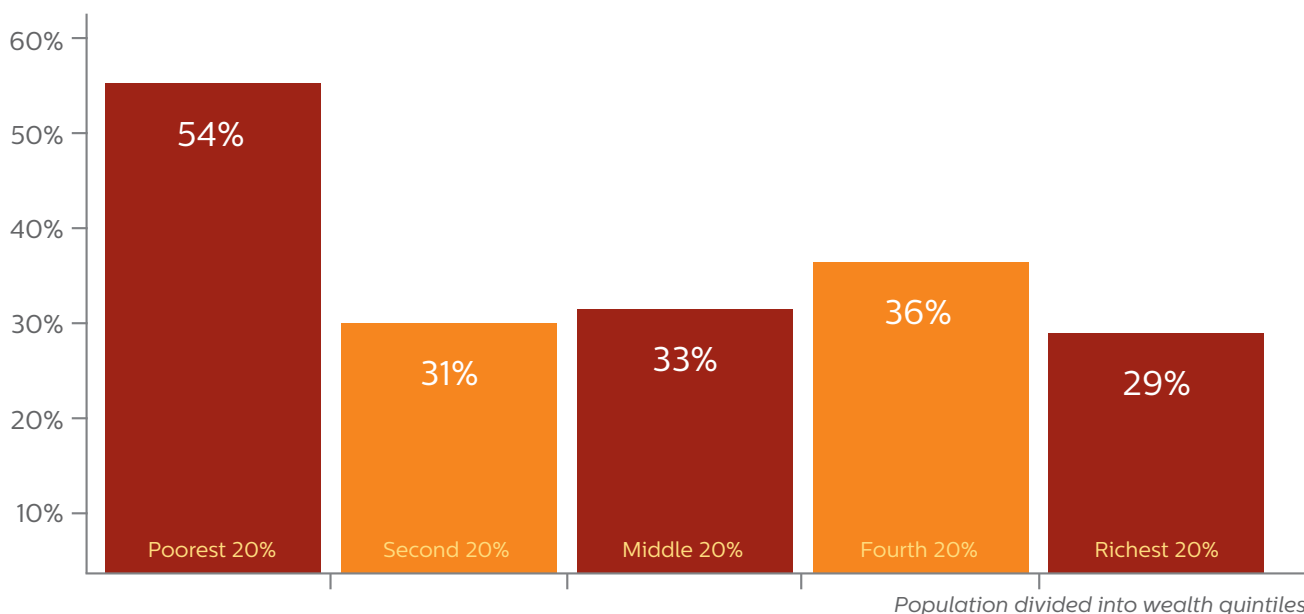
For both countries, DHS data shows that the under-5 child mortality rate is consistently high across all but the highest wealth quintile households. For Kenya this was recently reconfirmed by NGO Save the Children (source: DHS Ghana 2008 and Kenya 2008-2009; Save the Children, The Urban Disadvantage, 2015, see Image 1).

Yet in both Kenya and Ghana, rates of breastfeeding are well below what the World Health Organization recommends. Around 58% of Kenyan mothers initiate breastfeeding within an hour of birth and only 32% exclusively breastfeed for six months. In Ghana, 46% of mothers initiate early and 46% breastfeed exclusively for six months (source: DHS Ghana 2008 and DHS Kenya 2008-2009; State of the World's Children, UNICEF 2014).

Breastfeeding rates fall as household income rises. For example, in Kenya, women in the poorest fifth of households are 1.8 times more likely to breastfeed exclusively than women in the wealthiest households (see image 2, source: Demographic & Health Survey – DHS Kenya 2008-2009).

The combination of consistently high child mortality rates and declining breastfeeding rates might imply that as incomes rise, mothers may face specific work-related barriers to breastfeeding that prevent them from achieving optimal breastfeeding. If mothers across all income groups were able to maintain higher rates of breastfeeding, the high child mortality rates experienced by countries like Ghana and Kenya could be reduced, with many more child deaths prevented.

### Exclusive breastfeeding rates among babies (0-5 months) are low for all Kenyan households irrespective of wealth



(source: DHS, 2008)

Image 2



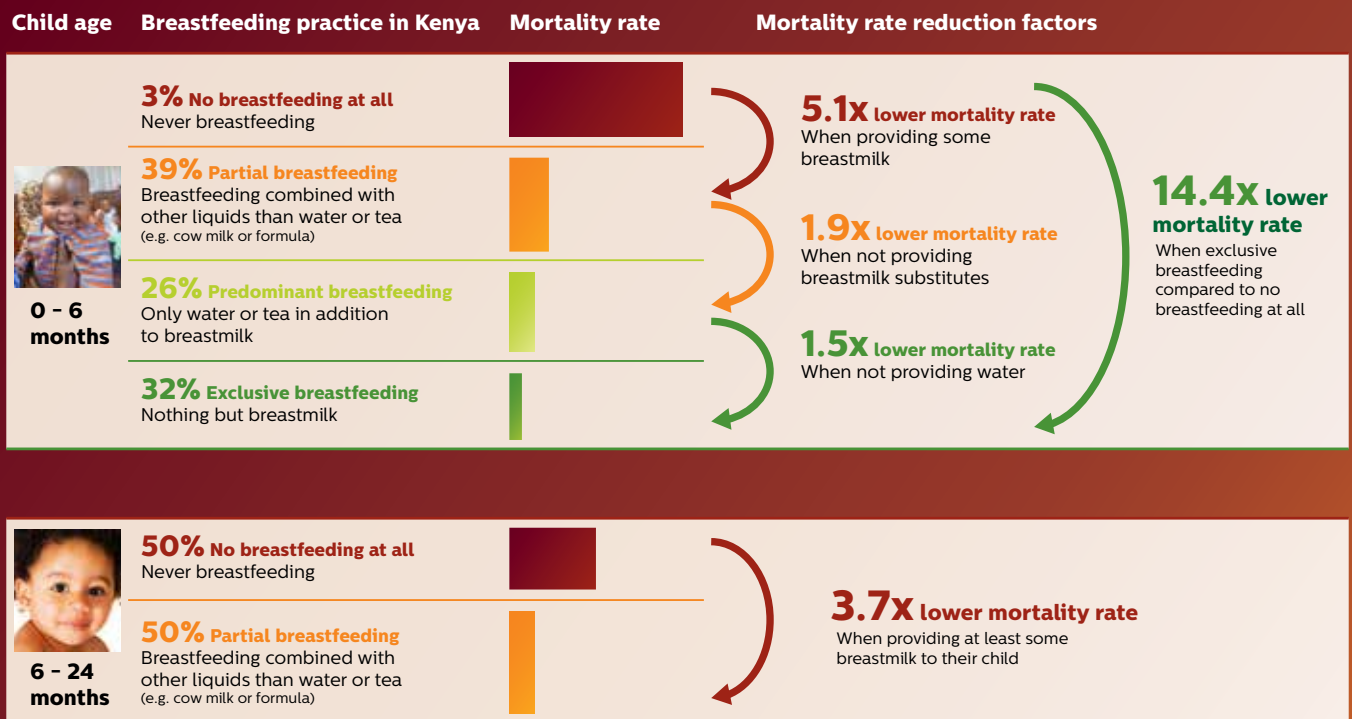
### The breastfeeding continuum

While exclusive breastfeeding for the first six months is the best practice, it is important to consider the full breastfeeding continuum: predominant and partial breastfeeding can also provide a significant positive impact on infant health. A mother who faces difficulties to breastfeeding exclusively is still able to improve the survival rate of her child by a factor of 5 through partially breastfeeding (see image 3).

### The stories behind the data

Whereas the numbers are clear, less is known about the perceptions, beliefs, aspirations and experiences mothers in urban Africa have around breastfeeding, specifically regarding the reasons why so many stop. We will dive into the experiences of these mothers in the next chapters.

## Breastfeeding Continuum and Child Mortality



Black, R. et al. (2008). *Maternal and Child Undernutrition 1: Maternal and child undernutrition: global and regional exposures and health consequence*. The Lancet

Image 3



## Base of the Pyramid (BoP)

The largest group in many African societies. Women in this group spend less than \$2.00 (Purchasing Power Parity) per day (source: African Development Bank, 2011). Typical occupations for these women are irregular and unreliable, such as being a market porter, charcoal seller, or clothes washer.

### Salamatu

**Occupation:** "I wash clothes for people."

*"Life in the village is good because it was less stressful and we had more time for our children."*



## Floating Class

A large and growing group of people in African cities, who have worked hard to rise above acute poverty, but remain vulnerable to economic disruption. Although definitions differ, Floating Class individuals spend approximately \$2.00 to \$4.00 (Purchasing Power Parity) per day (source: African Development Bank, 2011). The typical occupation is generally informal and 'semi-skilled,' such as hairdressing.

### Joyce

**Occupation:** "I am a hairdresser."

*"Breastfeeding is the right of the baby!"*



## Middle Class

A relatively small, but growing African urban population. Depending on the definition used, Middle Class individuals spend up to \$20.00 (African Development Bank, 2011) per day. Occupations for this group tend to be more formal, with jobs such as office worker and teacher.

### Caroline

**Occupation:** "I am a teacher."

*"My mother told me to give my baby water. I told her that was news in the old testament. We are now in the new testament. I'll find better tips on Facebook!"*

## 2. Scope of the **research**

Who are the mothers we spoke to?

This chapter provides an overview of research activities and the diverse profiles of our respondents.

### **Research set-up**

In October of 2014, Philips and Dr. Monk began research activities that included:

- Desk research and consultations with international advisory group and local experts;
- 30+ home visits for in-depth personal interviews with working mothers in Accra and Nairobi;
- 12 focus groups in Accra and Nairobi, with on average eight working mothers per session, and one group with fathers;
- Comprehensive survey among another 331 women in Accra and Nairobi;
- Observations at daycare centers, baby shops, hospitals, public spaces, and homes.

The insights gained from this study were used as input to guide and inspire ideation sessions with Philips designers and researchers.

### **Profile of respondents**

The interviews, focus groups, and surveys were equally divided between Accra and Nairobi. Women were selected to participate based on the following criteria:

- Mothers of children younger than two years (the majority with infants 0–6 months).
- Working mothers, with work being defined as an activity that generates income. This covers both formal and informal work.

These working mothers represented three distinct socio-economic groups (referencing ‘The Middle of the Pyramid: Dynamics of the Middle Class’ report, African Development Bank Group 2011): i) Base of the Pyramid (BoP), ii) Floating Class, and iii) Middle Class. This division is relevant, as each group represents a significant portion of inhabitants in Africa’s urbanizing regions, each with different expected barriers to breastfeeding.

# 3. Research **insights**

In speaking to hundreds of working mothers through personal interviews, focus groups and surveys, the picture emerges of a deeply felt responsibility toward the health of the baby, tempered with the realities of urban African life.

## **Coping in an African urban environment**

During the course of the research, we identified five areas across the breastfeeding continuum that demanded a closer look to assess their impact:

- Early moments in the hospital
- Life as a working mother
- Informal and formal daycare
- Expressing breastmilk
- Social and cultural beliefs

## **Early moments in the hospital**

The hour right after women give birth is crucial – immediate skin-to-skin contact and early initiation of breastfeeding are important for nutrition and immunity, and to stimulate further milk flow. Most women in Nairobi and Accra give birth in public hospitals, with committed yet overburdened staff. The exception is Middle Class mothers, of whom 44% in Accra and 67% in Nairobi in our survey reported giving birth in a private facility.

In our survey, 70% of BoP and 71% of Floating Class mothers reported starting breastfeeding within the first hour, compared to just 58% of Middle Class mothers. One of our Kenyan expert advisors weighed in with her opinion:

“In Nairobi, we see an interesting difference between births in public and private facilities. In the private clinics, the mothers are the clients, and their preferences are prioritized. If mummy wants to rest after delivery, the baby gets formula. In public hospitals, the baby comes first and the mother gets in trouble if she does not start breastfeeding right away.”

## **Life as a working mother**

Across the board, it was found that mothers know that breastfeeding is the right thing to do. Yet the ability to balance work and motherhood in a busy African city is hard. Female labor participation rates are high in Ghana (67%) and in Kenya (62%) (source: World Bank 2013). Pressure to work long days in order to make a sufficient income, stressful lives, and no space to express milk in the workplace, are all contributing factors to diminished breastfeeding rates.

Moreover, exclusive breastfeeding in the first six months is thwarted by a limited-to-no maternity leave. For mothers who are formally employed, paid maternity leave is three months both in Kenya and Ghana. However, as three quarters of the population in many African societies work informally, these policies barely serve the majority of women in lower income groups. Forced by the need to provide income for the family and driven by the fear of lost employment, 52% of the women in our survey reported going back to work within three months. Of the lower income women (BoP and Floating), 25% went back to work within one month.

Once back at work, what do the mothers do with their baby?

66-69% of women in the lower income groups take their baby with them to work. For the middle class, 25% takes the baby to work, and 52% of the babies are with the housekeeper or nanny often.

## **Urban African daycare**

The daycare situation in African cities is a largely unknown yet important field. One of our expert advisors commented:



“Urban African daycare is still a blind spot for us. Urbanization is rapid and policy lags behind. The daycare that women in urban settings rely on is informal, and remains outside the eye of the government and NGOs.”

With little regulatory oversight and parents in need, daycare centers have opened up throughout African cities – in (slum) homes, old garages and other repurposed spaces. Although working parents report concern about the quality of care, they sometimes have no choice but to send their children to these facilities: 19% of mothers in our survey reported to have used (paid) daycare.

These centers can be relatively costly, crowded, and unhygienic. Mothers in our survey reported an overall average of 12 babies per caretaker. In some centers, caretakers prepare food for the children. In others, the parents bring food, but worry that it may be given to children other than their own. Mothers report that daycare workers would not easily agree to give their expressed breastmilk to their babies, because of the cultural sensitivities in handling human milk (see section ‘Social and cultural beliefs’).

The daycare dilemma takes a slightly different turn with Middle Class mothers. Many Middle Class households informally employ housekeepers or nannies once children arrive. But they face the same issue as our BoP and Floating Class mothers – ‘what nanny or daycare can I trust to take good care of my baby?’ Kenyan experts suggest that even among children in the highest wealth quintile – who are often fed mainly starchy foods by the housekeeper – 25% are stunted (National Strategy for Maternal, Infant and Young Child nutrition, 2012 – 2017, Kenya Ministry of Health 2012).

As mentioned by mothers in all groups, trusting the caretaker of your baby is an important factor if you want to continue breastfeeding with expressed milk.

### Expressing breastmilk

Expressing breastmilk can support continuation of breastfeeding by working mothers. More than two thirds of mothers in our survey (69%) recognize the need to express breastmilk, in order to feed their baby while they continue to work.

Among the lower income groups, the use of breast pumps is not common – in fact, many mothers have never seen one. When introduced to a breast pump during the research, women reacted enthusiastically, although lower income women at first sight preferred the idea of a manual pump to “dangerous” electric devices. For Middle Class women, the idea of expressing milk and breastpumps is more familiar. In fact, with this group, breast pumps are becoming popular baby shower gifts.



The current context in African cities is often not friendly to expressing milk. To avoid risks of contamination, the full spectrum of milk expression needs to be considered: from sterilization, to education on basic hygiene and correct expression, to heating of milk, to safe and cool storage.

For the lower income groups, refrigeration of expressed breastmilk is difficult due to generally low access to refrigerators and freezers. For Middle Class mothers, the challenge often lies in keeping the milk cold during the long and warm commutes to and from work.

Our respondents reported that their current alternatives to feeding breastmilk are water, cow milk (in Kenya, hardly in Ghana), formula (in particular for higher income groups) and porridge.

### Social and cultural beliefs

Breastfeeding practices are inherently personal, intimate and entrenched in cultural beliefs. Beliefs are reproduced within families, where especially mothers in law have an important influence on new mothers. Although mothers in all three groups expressed the view that ‘breast is best’, the lower income groups in particular maintain traditional beliefs that compromise breastfeeding performance.

The following is a sample of beliefs we found:

*“A mother must handle her milk with care, because through breastmilk the bad eye can harm the mother or child.”*

*“Don’t pour breastmilk on the ground – it will harm the baby.”*

*“Water is life and the sun is hot, so the baby needs to drink water.”*

*“Breastmilk that has stayed in the breast for a few days has gone bad.”*

Beliefs aside, mothers are willing to invest the time and attention needed to gain more knowledge about breastfeeding. They participate in ‘new mother’ support groups and Middle Class mothers in particular seek out advice from social media outlets such as Facebook and YouTube.

# Reasons mothers stop breastfeeding

What do mothers themselves say? Throughout the course of our research, mothers provided a broad variety of reasons why they stopped breastfeeding. Image 4 is an overview of the most mentioned reasons and perceptions per stage.



Base of the Pyramid



Floating Class



Middle Class

<b>At the start</b>	"My baby does not want my milk."	"My milk is just not coming."	"I had a C-section." "Labor was really tough, I need to rest now."
<b>Within 2 weeks</b>	"I need to start working again. I'll lose clients"	"I got sick and my family says my milk is now spoilt."	
<b>Within 1 month</b>	"I don't have enough milk in me to feed my baby sufficiently."	"I have to start working to earn money again."	"My nipples are inverted, so it's really not working out." "Formula is easier."
<b>Within 3 months</b>	"My family advises me to stop."	"I don't have enough food myself - the baby drinks all that I eat."	"I need to go back to the office."
	"The baby now needs to eat porridge to grow strong."	"Life is stressful: my husband, money, my family. It's too much."	"I'm afraid my breasts will become saggy."
<b>Within 6 months</b>	"My baby is old enough."	"My working days are too long" "I don't like showing my breasts in public." "I don't like it if my breasts become flat." "My baby is old enough."	"I can't combine it with making a career." "I want my life back!" "My nipples are painful and breasts engorged." "My baby is old enough."
<b>Within 1 year</b>	"My child wants food, not milk."	"My child is strong enough to stop. And those teeth! Ouch!"	"My child is old enough to stop."
	"I can't combine it with work."	"My child doesn't want it any longer." "I myself become weak from breastfeeding."	"I can't combine it with my career." "My child doesn't want it anymore."
<b>Within 2 years</b>	"My child is old enough."	"My child is old enough."	"My child is old enough."

# Breastfeeding Innovation Matrix



Base of the Pyramid

Floating Class

Middle Class



Stimulation of early initiation in public and private health facilities

Human milk  
Milk flow stimulation



Phone based breastfeeding message and apps  
Mobile phone cash or non-cash incentives

Community outreach  
Printed media

Personalized (social) media



Work and breastfeeding

Safe milk preservation (e.g. pasteurization)  
Good quality daycare

Affordable breastpump  
Simple sterilization

On-the-go cooling solutions  
Employer Expression Rooms

Encourage breastfeeding continuation



Phone based peer counseling and lactation advice

Breastfeeding support training for community health workers



## 4. Towards **innovative solutions**

As the current study demonstrates, working mothers in cities like Nairobi and Accra face many different barriers to optimal breastfeeding. The barriers identified are often a combination of an unsupportive social, economic, cultural or political environments (such as no expression rooms at work) and low access to a technical enabler (such as a breast pump). Lowering barriers to breastfeeding will therefore require collaborative and multi sectoral efforts.

### **Call to action**

Our call to action is to empower working mothers in Africa through tailored breastfeeding supportive innovations, enabling them to combine going to work with giving their child the health benefits that only breastfeeding can provide. A single solution will not solve all the challenges mothers face; the uniqueness of their lives and the barriers they face need to be acknowledged to develop effective solutions. This report highlights insights we identified in the course of our research – the next steps is to create meaningful innovations based on mothers' realities.

### **Breastfeeding Innovation Matrix**

It helps to structure the quest for meaningful innovations through a Breastfeeding Innovation Matrix as visualized in image 5. This matrix maps the most promising innovations against the barriers to breastfeeding and the specific needs of different socio-economic groups, against the different barriers to breastfeeding.

Strategies that contribute to moving women forward along the breastfeeding continuum – from 'no breastfeeding' to 'partial' to 'predominant' to 'exclusive' breastfeeding – are key, as they can trigger a significant, positive impact on child survival and health. As seen in Chapter 1, the most impactful gains are to be made by women moving from 'no' to 'partial' to 'predominant' breastfeeding, hence innovations focused here need to be prioritized.

Using the Breastfeeding Innovation Matrix, let us highlight some potentially impactful directions for breastfeeding supportive innovations:

### **Initiation within 1 hour**

Critical to the effort to improve early initiation rates will be innovations that promote breastfeeding and increase access to breastmilk right after birth in medical facilities. This includes access to human milk banks for babies that cannot be breastfed.

As many deliveries take place in homes, it is important to implement these innovations in primary healthcare facilities. Our findings show that especially for Middle Class mothers, it is important to also bring technologies and awareness of the importance of early breastfeeding to private hospitals.

The Philips Community Life Centers could be a platform to make this possible, both in public and private settings. This concept combines primary healthcare strengthening with community development (through technology and services), resulting in many more safe deliveries at the facility, while transforming the health facility into a community hub (Philips, 2015).

Further innovations may be inspired by the Baby-Friendly Hospital Initiative, a global effort by the World Health Organization and UNICEF aimed at improving breastfeeding knowledge and policies at medical facilities.

### **Knowledge about breastfeeding**

Breastfeeding barriers related to knowledge and cultural beliefs will vary significantly between geographic regions and between socio-economic groups. This is why innovations are needed to make communications campaigns relevant for individual needs.

With mobile phone penetration high in urban Africa, mobile messages and social media have massive potential to change cultural attitudes and behaviors, and provide breastfeeding support to mothers. Mobile phone breastfeeding apps could be adapted, further developed, and popularized in countries like Kenya and Ghana. A tailored approach and appropriate evaluation are needed to test the effectiveness of such messages in new contexts. Mobile phones may also be used to provide cash and non-cash incentives for breastfeeding (BBC News, 2014).

### **Work and breastfeeding**

As the absence of work means the absence of income, and thus the absence of basic needs such as food and shelter, mothers in urban Africa need innovations that empower them to combine breastfeeding with work.

For mothers who are formally employed, it starts with employers offering access to facilities where mothers can express and store breastmilk. However, different solutions are needed for the majority of mothers in lower income groups, who generally work informally as small-scale entrepreneurs.

For all mothers, increased access to quality yet affordable breast pumps can improve the intensity and duration of breastfeeding when mothers return to work. To avoid risks of contamination, it is important to also ensure safe storage of the expressed milk and cleaning of hands and materials used. If refrigeration is a challenge, innovations that lengthen the life of breastmilk should be made available (e.g. pasteurization and alternative storage systems).

Innovations that improve hygiene (cleaning baby materials) are important and necessary in contexts where basic infrastructure like clean water and reliable sanitation are not fully in place. Our research showed that innovations in daycare are also urgently needed. Around 70% of the mothers in this survey agreed with the need – and are willing to pay – for better daycare centers that feed their own expressed breastmilk to their baby and provide good quality care for their baby while they go to work.

### **Encouraging continuation of breastfeeding**

Finally, innovations are needed to encourage mothers to continue breastfeeding at moments when they are tempted to stop.

Cell phone based peer counseling can support continued breastfeeding. Innovations that increase access to lactation specialist advice, possibly through mobile counseling, might help mothers to continue breastfeeding longer (Sellen 2014).

More comfortable breastpumps or access to affordable electric breastpumps may also help to increase intensity and duration of breastfeeding. For all innovations mentioned here, it is important to consider the electricity situation in many African cities and the off-grid lifestyles of especially lower income mothers.

Finally, training for midwives and community health workers on breastfeeding practices may enable them to better support mothers on their breastfeeding journey. In this light, we also see a role for expanding the integration of breastfeeding support and education into microfinance programs.





## 5. Discussion

We are entering an era where technological and social innovation can empower individual mothers to give their children a precious gift and the very best start in life: breastmilk. This unique exploratory investigation has provided us with new insights and opportunity areas, which we hope will spur a wave of breastfeeding supportive innovations for working mothers in urban Africa.

Success will depend on the ability of private partners, governments, academia and NGOs to work together to bring innovative ideas and technologies to the African market, in order to address the diverse barriers working mothers are facing today.

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### Contact Details

#### Philips:

Head of Philips Africa Innovation Hub:

Dr. Maarten van Herpen ([Maarten.van.Herpen@philips.com](mailto:Maarten.van.Herpen@philips.com))

Director Medical Affairs, Philips Mother & Child Care:

Dr. Victoria Davies ([Victoria.Davies@philips.com](mailto:Victoria.Davies@philips.com))

Research Scientist, Philips Research:

MSc. Doortje van de Wouw ([doortje.van.de.wouw@philips.com](mailto:doortje.van.de.wouw@philips.com))

#### Dr. Monk:

Project Leaders:

Lynn Zebeda ([lynn@drmonk.org](mailto:lynn@drmonk.org))

Ama van Dantzig ([ama@drmonk.org](mailto:ama@drmonk.org))

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