



Global Strategic Framework

A world where a female body is not a disadvantage

www.irise.org.uk
UK Registered Charity Number: 1157722
Uganda NGO Registration Number: 11946





Contents

SECTION 1 Developing the Framework

SECTION 2 The Fundamental Principles of Irise

SECTION 3 Our Identity

SECTION 4 Realising Period Equality

SECTION 5 The Current Context

SECTION 6 Ending Period Poverty and Shame by 2030

SECTION 7 Our East Africa Goals

SECTION 8 Our UK Goals

Foreword

“If we get help, many of us would go back to school and we can achieve our dreams and become future leaders.”

School girl, Uganda

“Younger people, in particular young women in all their diversity, need to be more involved in policy decisions.”

Young woman, UK

In 2020, the UN Development Programme (UNDP) published its first Gender Social Norm Index, analysing data from more than 75 countries. Director of the UNDP Human Development Report Office Pedro Conceição said,

“What our report shows is a pattern that repeats itself again and again... when we get to more empowering areas, we seem to be hitting a wall. We show that, on average, we are sliding back—that biases, instead of shrinking, are growing back.”





If we look at what has happened during the coronavirus crisis, we see the price of this failure to turn participation into power. Expert in pandemics and gender Claire Wenham noted in late March 2020 that she was not aware of any gender analysis of the outbreak by global health institutions or governments in affected countries despite evidence from previous disease outbreaks illustrating how essential this is. Irise's Needs Assessments across the contexts where we work demonstrate how girls and young women are bearing the brunt of the economic and social consequences of the pandemic. They are losing hope of realising their ambitions of the future, they feel unheard and unrepresented by those in power and unable to change the complex disadvantages they face as a result.

Irise's new global strategic framework transforms young women and girls' despair into power by placing their leadership and voice at the heart of Irise and putting our resources, networks and influence behind them. By focusing on removing the disadvantage created by the interaction between the female body and society we tackle a grave injustice and a neglected barrier to realising broader gender equality for all, catalysing much needed progress and ensuring a rapid and resilient recovery from the pandemic.

This document brings together the collective vision of the Irise community, recognising that we can deliver more meaningful, sustainable social change when we come together across divides. In the words of the African proverb that guided the development process for this document, "If you want to go fast go alone. If you want to go far, go together."

We are delighted to move forward together towards a world where a female body is not a disadvantage.



Linda Baines
Chair of the Irise International Board



Deborah Asikeit
Chair of the Irise Institute East Africa Board

Introduction

Irise was founded in response to the concerns of Kenyan schoolgirls about the impact periods were having on their ability to study and stay in school. At the time there was little recognition of this issue or action to address it. Further investigation revealed similar challenges in the UK and globally and Irise set out to respond directly to the voice and needs of marginalised girls by solving this overlooked challenge.

As our work has evolved we have become increasingly aware of the complexities of the issue we set out to address, its intersections with other forms of inequality and how it is perpetuated by harmful social norms and societal structures that fail to take account of the needs of the female body.

At the start of the pandemic, the rallying cry of our community was 'power, not just pads.' Young advocates across the contexts where we work recognised that what they needed and wanted was more power over their lives and bodies and that period poverty and shame were a manifestation of a deeper power imbalance that plagued their lives and was being exacerbated by the crisis.

The 'period equality' framework set out to capture these experiences, highlighting the different domains where a female body interacts with societal structures and norms to create disadvantage and defining where policy and intervention is required to eradicate this disadvantage. By framing the issue in this way we aim to capture some of the urgency, frustration and anger those affected experience when their society limits their potential because they have a female body. We also aimed to focus our efforts, as a global group, on ending this preventable disadvantage which is a grave injustice that belongs in the history books.



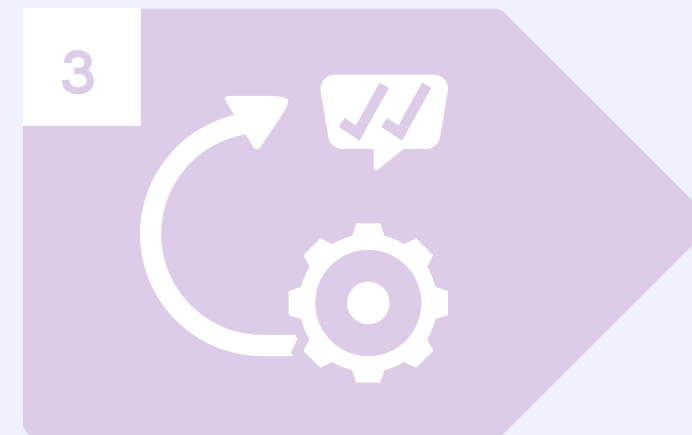
Developing the Framework



Initial Community
Consultations



Development of
the draft
framework



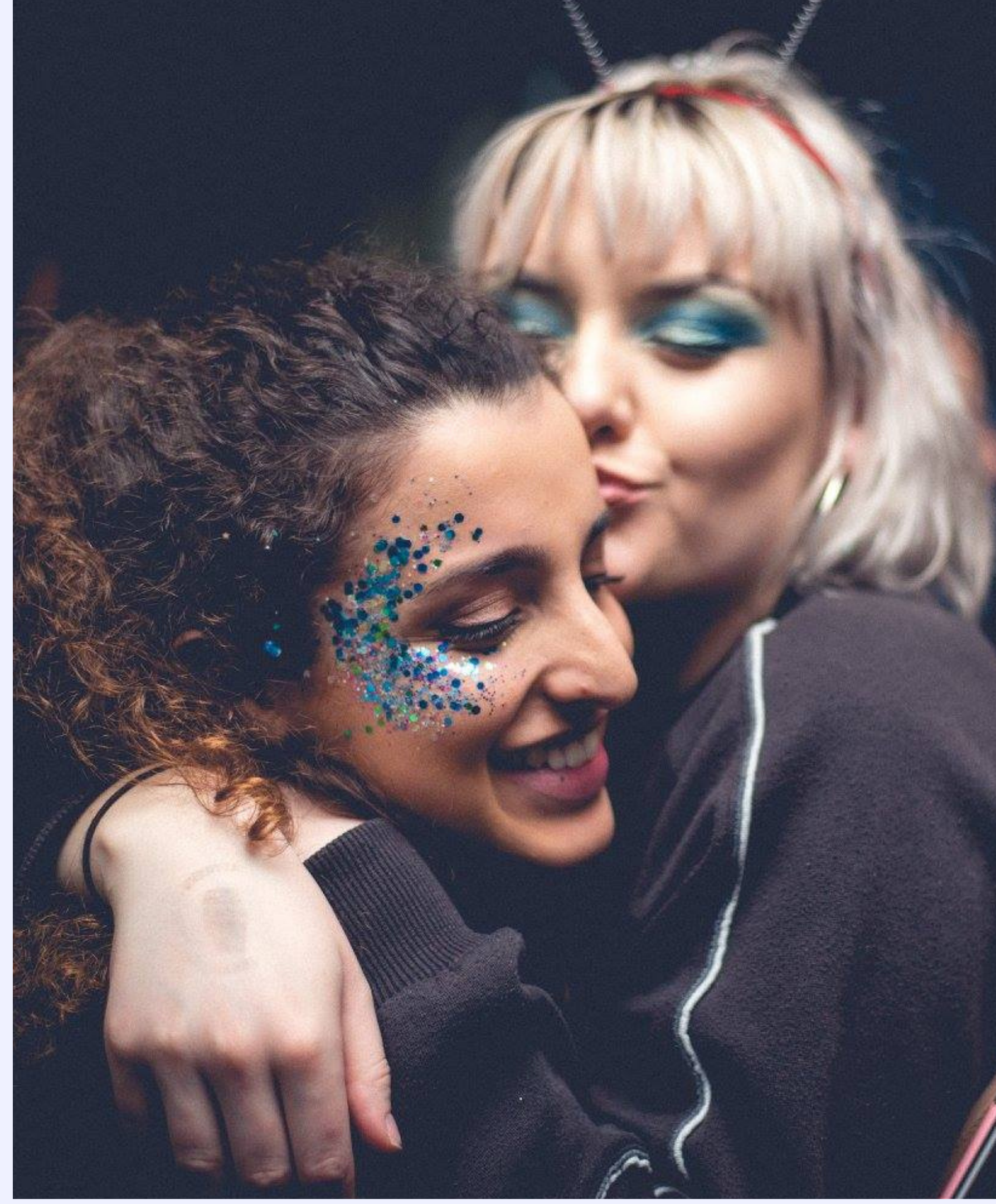
Further community
consultation to test
concepts and needs
assessments



Board Review and
sign off

We would like to thank everyone in the Irise community and beyond who contributed to the development of this document including:

- The 30+ young people and grassroots groups and organisations from our Empower Period Network in the UK and The Period Equality Network in East Africa who took part in our online consultation.
- The 7 UK partners and 47 young people who took part in in-depth interviews or submitted written evidence to our UK Needs Assessment.
- The 5 East Africa based organisations, 20 young people, 8 healthcare workers, 8 teachers and 8 community activists who took part in focus groups and interviews for our East Africa Needs Assessment.
- Those who took part in our Empower Period Forum UK consultation about experiences of period inequality via 3 open focus groups, 1 closed focus group for members of the LGBTQ+ community and a survey with 55 responses. A special thank you to PhD candidate, Heather Purshouse, who analysed and compiled this exercise.
- The board members at Irise International and Irise Institute East Africa for their expertise and guidance throughout the process.
- Researchers Julie Hennegan and Dani Barrington who led systematic reviews of menstrual experiences in low- and high-income contexts respectively. The findings of these reviews were an invaluable source of information when developing this framework.



The Fundamental Principles of Irise



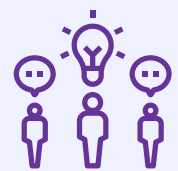
DRIVEN BY PASSION

We are driven by our shared passion for positive change. Our passion makes us courageous and committed to bold action on behalf of our community.



POWERED BY COMMUNITY

Our community is at the heart of everything we do, continually shaping the Irise group, our vision and priorities. We partner with the wider communities we exist within because change is most possible when it is pursued together.



ENABLING DIVERSE LEADERSHIP

Everyone has within them the power to lead and shape their community and world. Irise enables those affected by an issue to rise-up and lead transformative social change.



REALISING EQUALITY FOR ALL

We are committed to leaving no one behind and building inclusive solutions that involve and benefit everyone affected by the challenges we address.



ACCOUNTABILITY THROUGH EVIDENCE

We use evidence to unearth neglected issues, amplify the voices of those affected and hold ourselves to account for creating long lasting, meaningful impact.



BUILDING RADICAL SOLUTIONS

We are focused on learning and innovating to change the parameters of the challenges we face. We pioneer and champion solutions that address the root cause.



COLLABORATING FOR CHANGE

We are one global movement. All groups are equal, with an equal stake and an equal commitment to support one another. Irise pursues partnership, working with allies from all spaces and places in pursuit of our core vision and principles.



COMMITTED TO SUSTAINABILITY

We pursue long-lasting, sustainable change, prioritising long term solutions over short term fixes- even if the investment is greater and the journey is harder.

Our Identity

Our Vision

A world where a female body is not a disadvantage.

Our Mission

Enabling those experiencing disadvantage because they have a female body to overcome the barriers they face, supporting them to come together to reshape their wider communities and institutionalise sustainable change for all through collective power, learning and advocacy.



Realising Period Equality

Period Equality means a world where having a female body does not hold you back from realising your full potential.

It requires better:

Provision

Increasing access to products, facilities or services that improve the opportunity, health and wellbeing of those affected by period inequality.

Protection

Eliminating harms that result from having a female body and ultimately eradicating the harmful stigma and social norms that surround the female body.

Power

Enabling diverse, female leadership so those affected by period inequality can restructure their communities and societies to realise period equality for all.

Our Period Equality framework (left), produced in consultation with young women, girls and people with periods across contexts where we work summarises the different policy and intervention areas where having a female body and the social norms surrounding it interact with societal norms and structures to create disadvantage (or enable empowerment). This disadvantage is preventable, created by how we choose to structure our world- it is an injustice that can be ended and should be consigned to history.



Power

ECONOMIC EMPOWERMENT

Interaction between the female body and workplace policy and environment can hold back or enable people to realise their full potential. Having a female body is, on average, more expensive than a male body and when these costs are borne by vulnerable individuals an additional barrier to economic prosperity is created. Economic security is a key enabler of civil and political participation and leadership so when workplaces and wider society fail to cater to the needs of the female body, female leadership suffers.

LEADERSHIP AND VOICE

When diverse, female leadership is lacking from decision making spaces their vital perspective and insights are side-lined increasing the likelihood of bias and blind spots. Period inequality creates a cycle of disadvantage by making it more difficult for those affected to realise their potential as leaders, perpetuating leadership structures that fail to meet their needs.

PERIOD EQUALITY MEANS:



- Work environment and policy cater to the needs of the female body, including during the menstrual cycle, pregnancy and menopause.
- Diverse, representative leadership is achieved in decision making spaces, in particular on bodies, committees or in research intended to improve women's health.
- The additional cost of having a female body is not born by the individual in a way that prohibits their ability to realise their full potential.
- Everyone is comfortable and confident about their bodies, their identity and their capacity to lead.



PERIOD EQUALITY MEANS:

- Everyone has access to supportive and timely medical care for menstrual and reproductive health concerns.
- Female specific sanitation needs are met in all schools, workplaces and communities.
- Everyone has access to culturally sensitive, shame free information about the female body, including menarche, the menstrual cycle, menopause, pregnancy, childbirth, common menstrual disorders and reproductive health more broadly.
- Girls and young people with periods do not miss out on educational opportunities, including physical education because of unmet menstrual or reproductive health needs.

SANITATION, HYGIENE AND MENSTRUAL MATERIALS

Lack of access to sustainable, affordable menstrual products and appropriate facilities create a practical barrier to participation and a psychological burden of anxiety, indignity and even fear of harm when safe and private spaces are not available.

ACCESS TO EDUCATION

Everyone lacks access to stigma free information about the female body and young people miss out on education, including physical education because of unmet menstrual and reproductive health needs.

REPRODUCTIVE HEALTH

Women struggle to access stigma free, culturally sensitive, supportive healthcare. They face multiple barriers and delays and experience reduced quality of life as a result.

Provision

Protection

MENTAL HEALTH AND WELLBEING

Having a female body creates a significant mental burden directly related to stigma, shame and barriers accessing support.

SAFETY

Having a female body increases the risk of adverse events and health outcomes due to a combination of harmful social norms, stigma and data bias. This ranges from practices like Female Genital Cutting to harassment in public spaces to worse health outcomes for women when understanding of disease is dominated by research focused on the male body.

PERIOD EQUALITY MEANS:



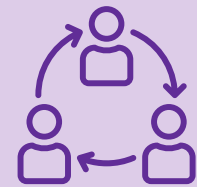
- Harmful sociocultural associations between menstrual and reproductive health events and the role and value of the female body are ended or replaced. For example, menarche is no longer associated with readiness for marriage, childbearing or associated with harmful practices like Female Genital Cutting and period poverty is no longer a trigger for Gender Based Violence.
- We know as much about the female body and its manifestations of health and disease as we do about the male one.

All our work creates change within this framework across three levels:



PRACTICES AND PERCEPTIONS

We transform the lives of those affected by period inequality through enabling them to come together and overcome the challenges they face—forming communities of change.



STRUCTURES AND STEREOTYPES

We enable our communities of change to work with wider local, national and international communities to create environments that empower those affected by period inequality.



DATA AND DIALOGUE

We work with governments, academic institutions and civil society to generate learning, advocate and institutionalise sustainable change for all.

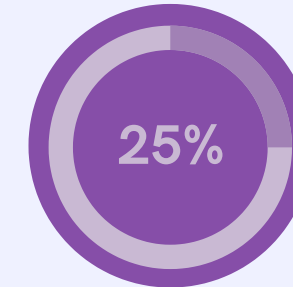
The Current Context

ECONOMIC EMPOWERMENT & LEADERSHIP AND VOICE

Globally



Women are less likely to participate in the labour market than men, are paid less and more likely to be in informal, vulnerable employment.¹



Only 25% of all national parliamentarians are women.⁵

In East Africa



nearly a quarter of women working at the market usually missed work because of their period in Uganda.²

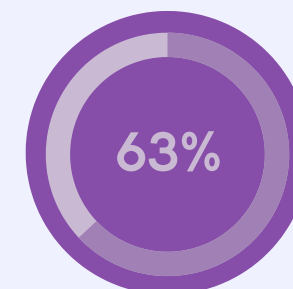


Economic empowerment enables civil and political leadership. Women are more likely to work in lower paying industries or in the informal sector and youth unemployment is high particularly among young women.

In the UK



The estimated cost of having a period is £4,800³ and an estimated 23% of women have taken time off work because of their period.⁴

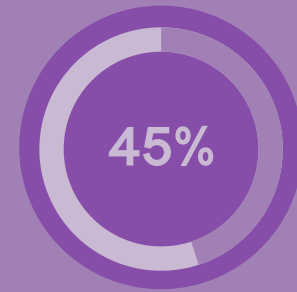


Young women do not feel represented or listened to by those in power.⁶ 63% think girls would be listened to more if there were more female MPs.⁷

SANITATION, HYGIENE AND MENSTRUAL MATERIALS, ACCESS TO EDUCATION & REPRODUCTIVE HEALTH

Globally

At least
500 million
women lack adequate facilities for
menstrual management.⁸

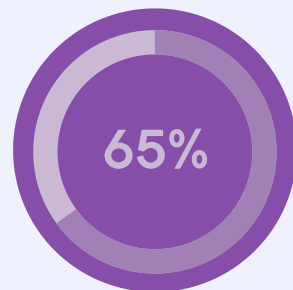


Worldwide 132 million girls are out of school, only 45% of countries have achieved gender parity in lower secondary education (and only 66% in primary education).¹¹

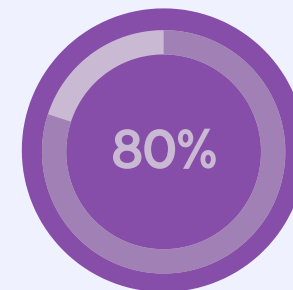


Learning from male bodies is frequently still the default and women's health is underinvested in.

In East Africa



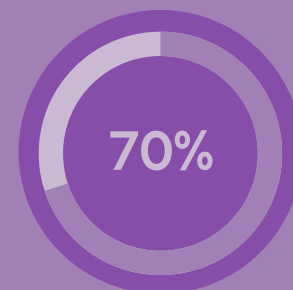
In Kenya 65% of girls and women are unable to afford menstrual pads.⁹



In Uganda 80% of girls lack the basic facts about their bodies and half miss school during their period.¹²

Research has found unmet need from providers for menstrual related concerns and negative attitudes towards pain¹⁵ plus potential links between support for menstrual health and reduced rates of unwanted pregnancy & reproductive tract infections.

In the UK



1 in 10 girls struggle to afford products and 70% aren't allowed to go to the toilet in lessons.¹⁰

Half of girls have missed school because of their period,¹³ 1 in 8 women didn't know about periods until they started menstruating.¹⁴



Women commonly reported being dismissed by healthcare providers¹⁶ diagnosis times for endometriosis have not improved in over a decade.¹⁷



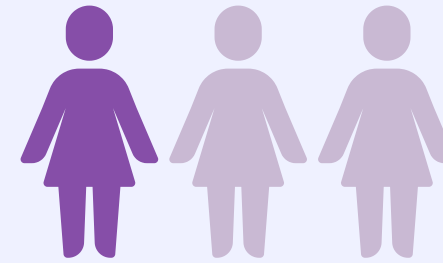
Less than 2.5% of publicly funded research was dedicated to reproductive health, yet 1 in 3 women experience a gynaecological or reproductive health issue.¹⁸

MENTAL HEALTH AND WELLBEING & SAFETY

Globally



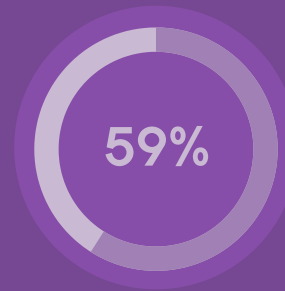
There are higher rates of depression and anxiety among women globally and strong evidence that gender-based differences contribute significantly to the higher prevalence and some evidence that gender-based violence is also a contributor.¹⁹



Nearly 1 in 3 women have experienced gender based violence, violence disproportionately affects women in low and middle income contexts:

- 1 in 5 women aged between 20-24 were married before the age of 18,
- 200 million women and girls have undergone Female Genital Cutting,
- 15 million adolescent girls have experienced forced sex and school related gender based violence is a significant obstacle to universal schooling.²³

In East Africa



Over half of the girls Irise supports report low confidence and 59% struggle to concentrate during their period.²⁰

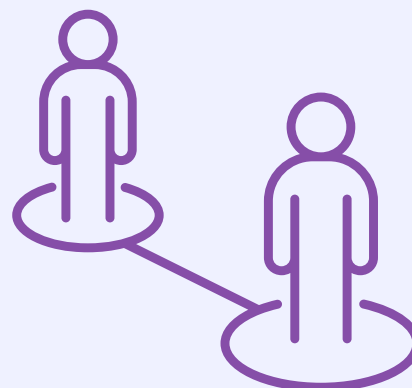
1 in 10 fifteen year old schoolgirls report having sex in exchange for menstrual pads²⁴ and young activists report that period poverty is a trigger for gender based violence.



In the UK

A significant mental burden results from women's menstrual experiences.²¹

More broadly, the mental health of young women and girls is deteriorating and the gap between men and women has widened in recent years.²²



Young women report feeling unsafe in public spaces and online.

- 1 in 5 girls have been bullied or teased because of their period.²⁵
- Lack of gender sensitive policy accentuates their vulnerability.²⁶



Ending Period Poverty and Shame by 2030

Period inequality is an overlooked barrier to realising Sustainable Development Goals, in particular:



SDG 3 - Good Health and Wellbeing



SDG 4 - Quality Education



SDG 5 - Gender Equality



SDG 6 - Clean Water and Sanitation



SDG 8 - Decent Work and Economic Growth.

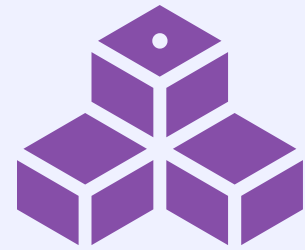
The global campaign to end period poverty and shame globally by 2030 is a critical step in realising a world where having a female body is not a disadvantage.

It is even more critical as young women and girls around the world bear the brunt of the social and economic consequences of the pandemic.

Governments and the international community have made significant investments and taken decisive steps to support girls over the last decade but action is needed to hold them to account and ensure real tangible change is delivered in the lives of those affected by period poverty, shame and inequality.

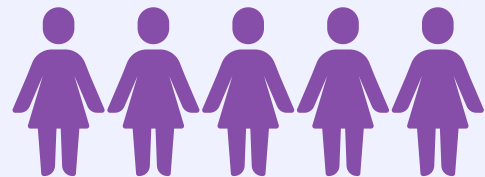
Irise will accelerate progress through:

1. BUILDING UP



We will equip civil society and the grassroots with the frameworks, tools and data required to hold local and national governments, international stakeholders and the menstrual movement to account for ending period poverty and shame by 2030.

2. STANDING UP



We will bring together the grassroots and youth led movements across the contexts where we work enabling them to advocate together for the changes they need.

3. RISING UP



We will develop and deliver programmes that realise meaningful change in the lives of those affected by period inequality and harness our learning to enable others to do the same.

Our ambition is to work with the global movement to lift 500 million women and girls²⁷ out of period poverty and shame by 2030 supporting a resilient, gender sensitive recovery from the pandemic and accelerating progress towards the SDGs.



Our East Africa Goals

Our ambition is to create period friendly schools and communities for half a million girls by 2025.

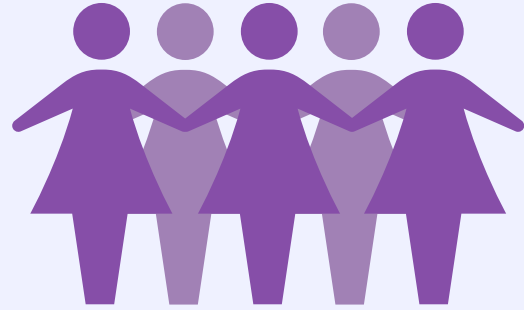
Our Approach

The East Africa strategy, reflects the global agenda by shaping interventions through a rights-based, community-focused approach that enables the voice and leadership of young women and girls. Its principles hinge on the Agenda 2030 for Sustainable Development which calls for each and every one of the actors to “transform our world.”

We will:

1. Strengthen, coordinate and build the capacity of the grassroots, particularly young women-led networks and groups focused on realising period equality at the national and regional level.
2. Build partnerships to generate the learning and resources needed to support their priorities for change.
3. Develop and deliver effective, evidence-based programmes for schools and communities that end period poverty and shame and empower our network of partners to replicate and scale them.

Our Priorities



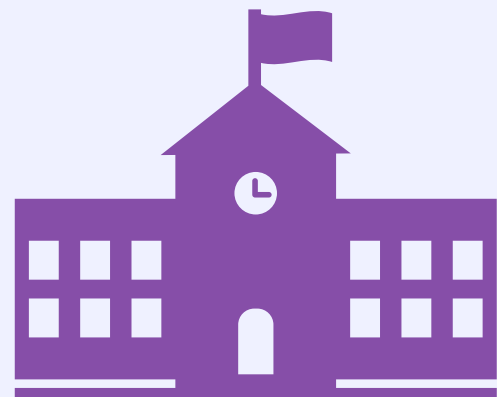
Equipping the grassroots women-led movement

We will continue to create collaborative spaces for shared learning and peer to peer support, providing training and grants to build a community of best practice and strengthen menstrual health programming via The Period Equality Network. We will create shared platforms and priorities for advocacy and equip our grassroots networks with the frameworks and data to drive the change they want to see.



Ending period poverty through economic empowerment

We recognise the women's leadership is intrinsically linked to their economic resources and that period poverty is an acute manifestation of their economic disempowerment. We will build the community of female entrepreneurs and women-led businesses connecting through Irise enabling them to build sustainable businesses and create pathways to economic empowerment for the most marginalised young women and girls in their community. We will support and work with this community to create an enabling environment for new products that benefit women through driving the social norm and policy change required for their widespread introduction and uptake.



Enabling every girl to stay in school during her period

We will scale our tried and tested intervention to create period friendly schools and communities in partnership with local and national government and via our grassroots network. Impact evaluation shows that with this support communities can make sustainable changes that enable girls' to stay in school and perform better. The girls' clubs embedded within this intervention create a long-term mechanism for girls' voices and priorities to be heard.

Our UK Goals

Our ambition is to enable the youth-led movement and their allies in the UK to hold the government to account and lift 1.6 million young people²⁸ out of period poverty and shame by 2025, catalysing progress towards Period Equality for all by 2030.

Our Approach

Young people are uniquely positioned to end the shame and stigma that surround the female body within a generation. Thanks to the advocacy of young people, the UK government committed to end period poverty and shame in the UK by 2025 but the situation is currently getting worse.

We will:

1. Put our youth-led Empower Period Network at the heart of our UK strategy and work, enabling them to identify and pursue their priorities, putting Irise's resources at their disposal.
2. Mobilise our national network of period equality and youth-led social change focused organisations, academic partners behind realising the priorities of our Empower Period network through learning, advocacy and campaigning.
3. Deliver direct support to those most affected by period inequality through our network of community-based organisations and via our growing online community of peers, alongside creating opportunities for those receiving support to join advocacy efforts.

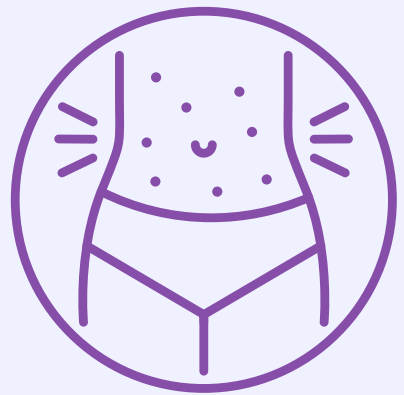


Our Priorities



Enabling diverse, female leadership

We will transform the hopelessness those we support are experiencing by putting their leadership at the centre of all our programming and advocacy, alongside creating spaces and mechanisms within Irise that nurture, support and celebrate emerging leaders, including peer mentorship, small grants for youth-led groups and young advocates and creating leadership positions within the Empower Period forum and network and within Irise itself for young female leaders from underrepresented groups.



Ending the stigma around the female body

We will enable our network to end the stigma and shame that surround the female body through taking direct action to address the failings of the systems and institutions that support them, using this direct action to mobilise other stakeholders to also act and undertaking advocacy to institutionalise change. We will build a national network of peer educators who can step into the gap and empower others by creating online resources and delivering content in schools and communities alongside creating and deliver 'empowerment packs' that focus on choice and control of your menstrual product, body and life.



Empowering the most marginalised

We will combat the structural inequality that has been worsened by the pandemic by delivering direct support to the most marginalised people affected by the issues we address through the community-based organisations that know them best including those with disabilities, young women from ethnic minority groups, young carers, young people in care, young women from low-income households, refugees and victims of domestic abuse and other forms of exploitation. Through direct, practical support we will build their confidence, capture their experiences and priorities for change and when appropriate, enable their advocacy via the Empower Period Network.

Our UK Goals

References

1. UN Women (2018) Economic Empowerment; Facts and Figures. [Online] Available at: <https://www.unwomen.org/en/what-we-do/economic-empowerment/facts-and-figures>
2. Hennegan et al (2020) 'I do what a woman should do': a grounded theory study of women's menstrual experiences at work in Mukono District, Uganda BMJ Global Health; 5:e003433
3. Bloody Good Period (2020) Periods and Pandemics. <https://www.bloodygoodperiod.com/post/periods-and-pandemics>
4. Bupa, Female Health and Employment [Online] Available at: <https://www.bupa.co.uk/business/news-and-information/female-health-and-employment>
5. UN Women (2021) Facts and Figures; Women's leadership and political participation [Online] Available at: <https://www.unwomen.org/en/what-we-do/leadership-and-political-participation/facts-and-figures>
6. Irise International (2021) Young and Female; the Double Disadvantage; an urgent call to action to unlock the potential of young women. Plan International UK (2020) The State of Girls Rights in the UK. [Online] Available at: <https://plan-uk.org/file/plan-uk-state-of-girls-rights-coronavirus-reportpdf/>
7. Parliament UK (2020) The role of parliament in women's inclusion and representation. [Online] Available at: <https://publications.parliament.uk/pa/cm201617/cmselect/cmwomeq/630/63005>
8. The World Bank (2018) Menstrual Hygiene Management Enables Women and Girls to Reach Their Potential. [Online] Available at: <https://www.worldbank.org/en/news/feature/2018/05/25/menstrual-hygiene-management>
9. FSG (2016) Menstrual Health in Kenya [Online] Available: https://menstrualhygieneday.org/wp-content/uploads/2016/04/FSG-Menstrual-Health-Landscape_Kenya.pdf
10. Plan International UK (2018) Break The Barriers; girls' experiences of menstruation in the UK. [Online] Available at: <https://plan-uk.org/file/plan-uk-break-the-barriers-report-032018pdf>
11. UNICEF. Girls' Education. [Online] Available: <https://www.unicef.org/education/girls-education>
12. Irise International (2018) Baseline Report for 'Creating Menstruation Friendly Schools in Uganda.
13. Plan International UK (2018) Break The Barriers; girls' experiences of menstruation in the UK. [Online] Available at: <https://plan-uk.org/file/plan-uk-break-the-barriers-report-032018pdf>
14. Water Aid (2018) New survey shows lack of period knowledge across the UK [Online] Available at: <https://www.wateraid.org/uk/media/new-survey-shows-a-lack-of-period-knowledge-across-the-uk-as-wateraid-launches-periodproud>
15. Hennegan et al (2020) 'I do what a woman should do': a grounded theory study of women's menstrual experiences at work in Mukono District, Uganda BMJ Global Health; 5:e003433
16. Barrington et al (2021) "Experiences of Menstruation in High Income Countries: A Systematic Review, Qualitative Meta-synthesis and Comparison to Low- and Middle-income Countries." SocArXiv. March 13. doi:10.31235/osf.io/tajkp.
17. All Party Parliamentary Group on Endometriosis (2020) Endometriosis in the UK; time for change. [Online] Available: <https://www.endometriosis-uk.org/sites/endometriosis-uk.org/files/files/Endometriosis%20APPG%20Report%20Oct%202020.pdf>
18. UK Clinical Research Collaboration (2014) UK Health Research Analysis 2014 [Online] Available: <https://www.ukcrc.org/wp-content/uploads/2015/08/UKCRCHealthResearchAnalysis2014-WEB.pdf>
19. World Health Organisation (2002) Gender and Mental Health [Online] Available at: https://www.who.int/gender/other_health/genderMH.pdf
20. Irise International (2018) Baseline Report for 'Creating Menstruation Friendly Schools in Uganda.
21. Barrington et al (2021) "Experiences of Menstruation in High Income Countries: A Systematic Review, Qualitative Meta-synthesis and Comparison to Low- and Middle-income Countries." SocArXiv. March 13. doi:10.31235/osf.io/tajkp.
22. Mental Health Foundation (2017) While Your Back Was Turned. [Online] Available at: <https://www.mentalhealth.org.uk/publications/mental-health-young-women-and-girls>
23. UN Women (2021) Facts and figures; Ending violence against women. [Online] Available: <https://www.unwomen.org/en/what-we-do/ending-violence-against-women/facts-and-figures>
24. Phillips-Howard et al. (2016) Menstrual cups and sanitary pads to reduce school attrition, and sexually transmitted and reproductive tract infections: a cluster randomised controlled feasibility study in rural Western Kenya, BMJ Open 6:e013229. doi: 10.1136/bmjopen-2016-013229
25. Plan International UK (2019) One in Five Girls Bullied or Teased because of their Period. [Online] Available: <https://plan-uk.org/media-centre/one-in-five-uk-girls-teased-or-bullied-because-of-their-period-new-survey-finds>
26. Irise International (2021) Young and Female; the Double Disadvantage; an urgent call to action to unlock the potential of young women
27. FSG estimate that up to 500 million women and girls are living each month in period poverty: <https://www.fsg.org/publications/advancing-gender-equity-improving-menstrual-health>
28. There are approximately 16.27 million young women and girls between the ages of 11 and 30 in the UK. Data suggests that at least 1 in 10 are negatively affected by period poverty and shame although more accurate monitoring is urgently needed.