

Clean Med Oxford

Putting health at the heart of the Green Economy agenda

*Making the links for
Sustainable Development*

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Key Messages

1. **Health is an important *input* to sustainable development** – healthy people are better able to learn, work and contribute to their economies and societies.
 - **Universal access** to health services is key input to better health.
2. **Sustainable Development can *improve health*** – smart strategies for transport, housing, energy & agriculture reduce NCDs and diseases of poverty, and enhance health (e.g. physical activity).
 - **This is not automatic! "Health in green economy"** opportunities have not been fully exploited.
 - **Health *risks* and *benefits* of different economic development strategies** need more explicit consideration.
3. **Health indicators can measure the success of sustainable development goals and support governance.**
4. **Greening the health sector leads by example**

Greening health sector – recent advances/synergies

- UNSG 2012 year of Sustainable Energy for All (SE4ALL): Access, Efficiency and Renewables
 - May 2013 Baseline assessment on access to include health care facilities
 - Margaret Chang launches with UNF and UNWomen: High Impact Opportunity: Women, Energy and Health
- Minamata (Mercury) Convention
 - first global environmental convention with section on health
- SAICM Health sector strategy
- UNDP/WHO/HCWH model health care waste and mercury elimination

1992 Rio Declaration Principle I

“Human beings [are] the central concern of sustainable development”....” living a healthy and productive life in harmony with nature.”

Better health has to be seen as an indicator of what sustainable development can and should achieve. UN member states and other stakeholder groups are discussing exactly how to address these themes in the text,

The Future We Want.

Smart development choices can reduce pollution/injury and improve health



A photograph showing two women in blue uniforms installing solar water heaters on a roof. The woman on the left is wearing a blue headscarf and a blue t-shirt with 'Kuyasa' and 'COMMUNITY PROJECT' printed on it. The woman on the right is wearing a blue t-shirt with 'SWIS' printed on it. They are working on a roof with several solar water heaters. In the background, there is a township with many small, simple houses and a clear blue sky. A yellow circle is overlaid on the left side of the image, containing the text 'Linking health to Green Economy strategies...'.

Linking
health to
Green
Economy
strategies...

Example 1: 'Green' urban transport can reduce chronic disease, injuries and improve health equity

Transport reliant on private vehicles increases congestion, pollution, and physical inactivity.

Safe walking/cycling and rapid transit networks can reduce injury, cardiovascular disease & support healthy physical activity.

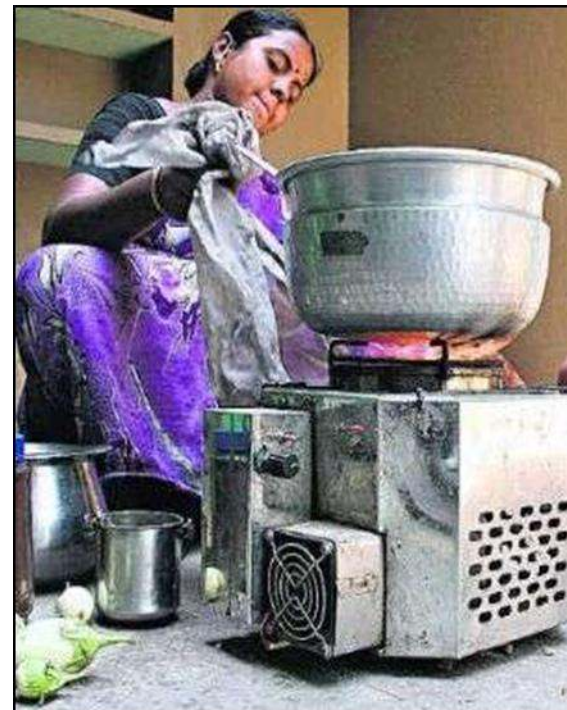
Cycling to work reduced premature mortality by 30% among commuter groups in Shanghai & Copenhagen.

Rapid transit/NMT improves access to schools, jobs & services for poor, children, women, elderly & disabled, improving equity.



Example 2: Clean household energy for the world's poor is central to improving women's and child health

- Avert 1 million deaths/yr from COPD & cancers (mostly women);
- Halve rates of childhood pneumonia;
- Reduce time spent fuel gathering & promote gender equality;
- Support UN 'Year of Sustainable Energy' & MDGs;
- Reduce deforestation, urban air pollution & climate change emissions of methane/black carbon & CO₂.



Example 3: 'Greening' health facilities can expand coverage of maternal, child & emergency services

21-58% of health clinics in 11 African countries had **NO** electricity at all. Women give birth in the dark, by candlelight, by car headlights.

5-12% of clinics surveyed in six countries lacked **access to clean water** (from an "improved" protected well or piped source).

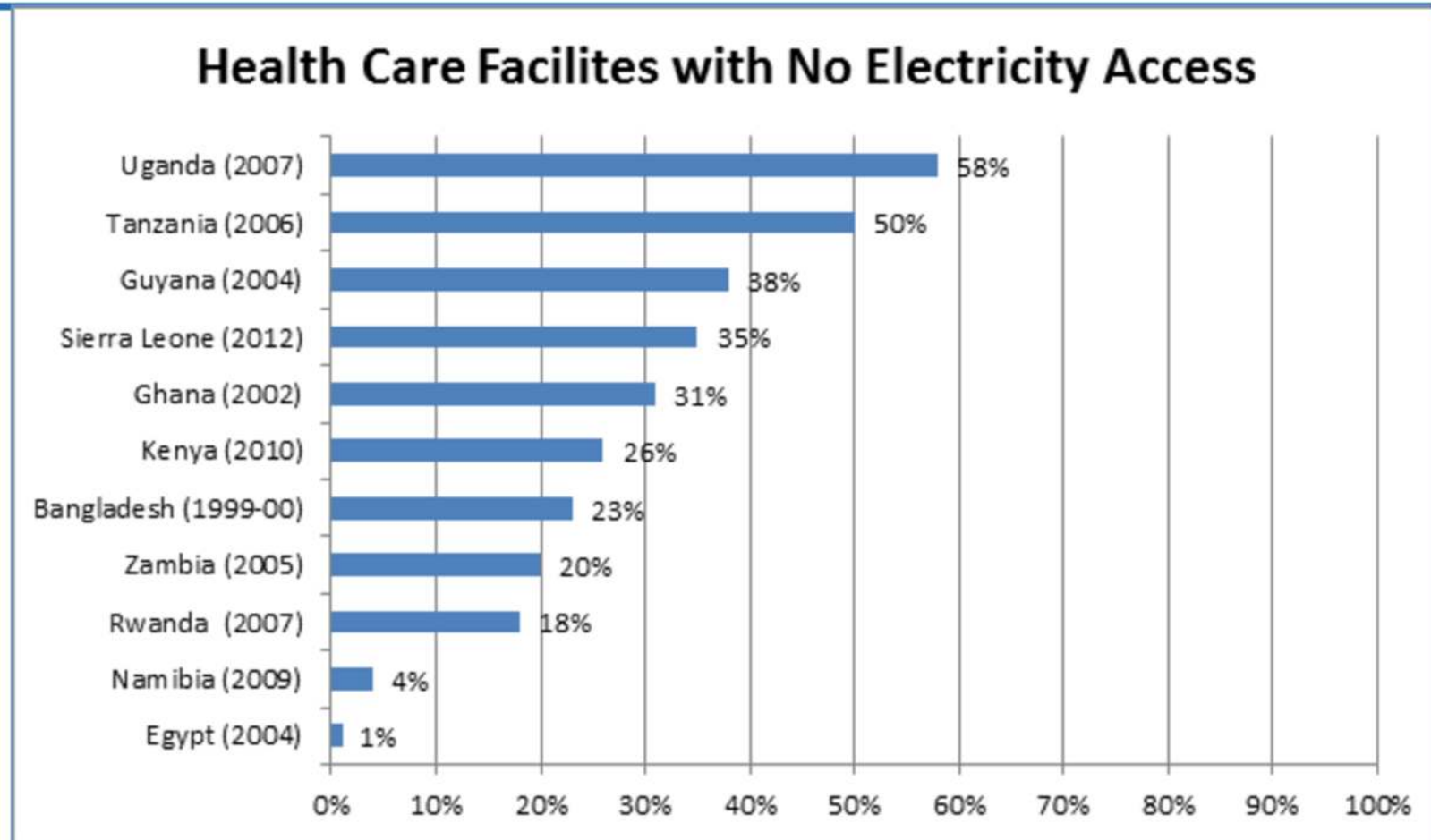
Small solar panels generate basic electricity for **lights, cold chain/ vaccines, diagnostics, telecommunications, water**



I: Energy Access – issues and needs

Rooftop panels for Solar refrigerator in Vietnam: Project Optimize

“Only 34% of hospitals have reliable electricity access in surveyed sub-Saharan African countries”



Adair-Rohani. Global health: science and practice

<http://www.ghspjournal.org/content/1/2/249>

Data Sources: USAID SPA, WHO SAM/SARA

A "silent epidemic" of energy poverty in health facilities

1. Lack of power constrains infrastructure, e.g. water, phones... and services.
2. Inequalities also exist in terms of access to energy between hospitals in the same city/ locales.
3. How energy access can help drive universal health access - sustainable development as a driver of change.
4. Mobilizing the health sector – WHO's role

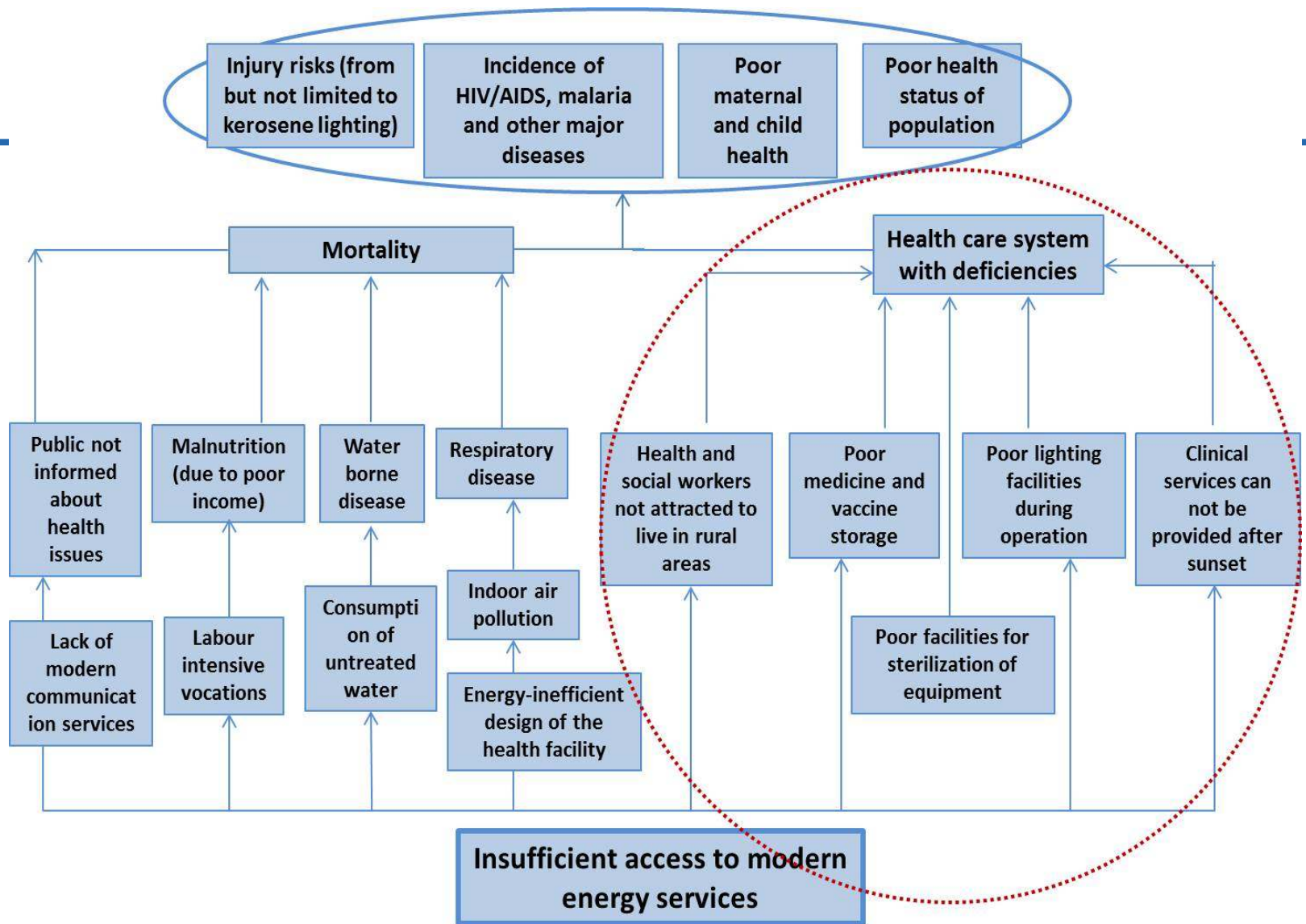


Figure 1: Impact of Energy Access on *Public Health*. Adapted from EC (2006).

Issue 2. Energy inequalities

Estimated Electricity Consumption in Hospitals in India, 2008 (USAID)

Hospital	No. of Beds	Estimated kWh/Bed/year	Assumed Electricity Cost per kWh	Estimated Electricity Consumption (Million kWh)	Estimated Electricity Cost (Rs. Millions)
Government Hospitals -Urban	328,491*	750 – 1500	Rs. 5	246 - 492	1232 - 2464
Government Hospital - Rural	154,031*	150 - 300	Rs. 4	23 - 46	92 - 184
Private/NGO Hospitals & Nursing Homes	500,000**	1000 – 2000	Rs. 6	500 – 1000	3000 – 6000
Total	982,522	----	-----	769 - 1538	4324 - 8748

India (USAID)

- Private hospitals used 25% more power per bed than government facilities – disparities can be 10x more in some cases.
- Urban government hospitals used 5x more electricity than rural facilities

Issue 3. Energy waste

1. **Grid transmission is often inefficient (heat loss, transmission losses)**
2. **At facility level, savings on order of 8-25% may be feasible in large facilities (of poor countries)* with better management of:**
 - Office equipment and lighting left on standby
 - Choice/ use of medical devices/appliances: "most efficient appliances require a factor of two to five less energy than the least efficient appliances available today." (IPCC 6.4.11 in: Climate Change, 2007)
 - Building management attuned to local climates, including better mix of natural ventilation and HVAC – to reduce expense, improve health and sustainability

Citations:

J J Hospital Mumbai, India. Promoting an Energy Efficient Public Sector (PePS) (<http://www.mahaurja.com/PDF/JJ%20Case%20Study.pdf>).

"The most efficient appliances require a factor of two to five less energy than the least efficient appliances available today." (IPCC 6.4.11)

II: Powering health access – 5 key entry points

Changchun, Jilin Province No. 1 hospital, rainwater harvesting and grey water harvesting system

1. Onsite power generation and storage: clean, efficient

Combined heat and power (CHP); renewables; hybrid systems

Energy self-sufficiency

Improved basic services

Resilience in emergencies

Lower maintenance/fuel/energy costs (after installation)





Facility cost savings: (USAID)



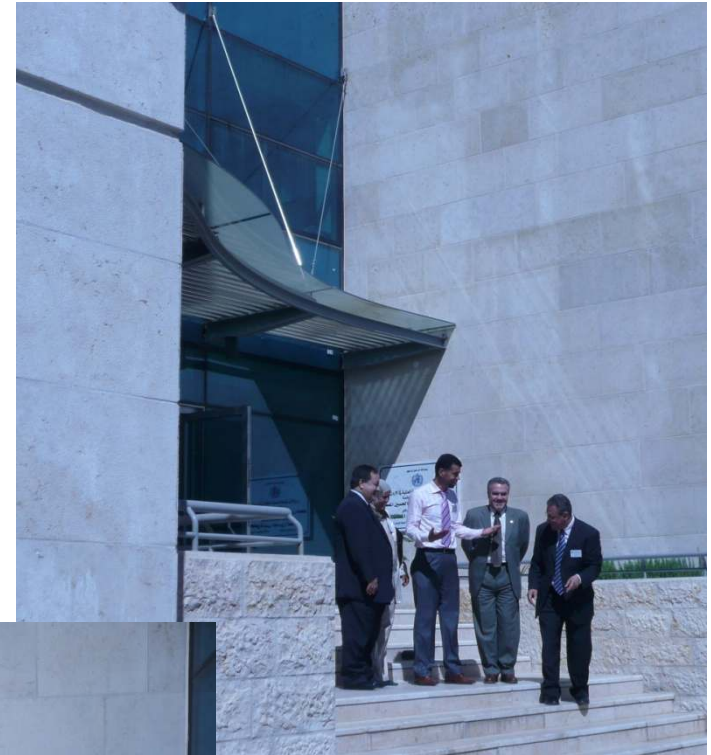
In small off-grid installations
(5 kWh/Day: maintenance of
Solar Panels can be less than
half the cost of generator fuel/
maintenance (USAID, 2009))

5 Kwh/day Installation

	Solar PV	Diesel
System Size	1200 W panels 20 kWh batteries	2.5 kW
Installation Cost	USD 14 000	USD 2,000
Operating Cost	<u>USD 500</u>	<u>USD 1,400</u>

2. Low-energy design : WHO Center for Environmental Health Action (CEHA) in Jordan is LEED Gold **

- ❖ Leadership in Energy and Environmental Design voluntary rating systems
- ❖ LEED for Healthcare (from the Green Guide for Health Care):
 - ❖ Sustainable sites
 - ❖ Water efficiency
 - ❖ Energy & atmosphere
 - ❖ Materials & Resources
 - ❖ Indoor Environmental Quality
 - ❖ Innovation & Design



3. Natural ventilation – making the most of it for energy and health

- ❖ South Africa Natural Ventilation for TB Infection Control – 9 facilities opened in 2011 (design right)
- ❖ Hong Kong: Grantham Hospital Nat Vent for TB control since 1957 with SARS benefit

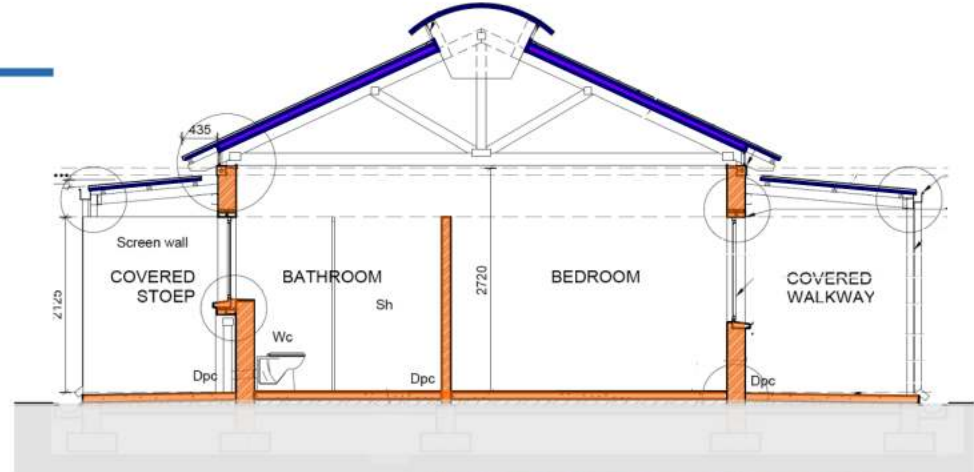


Table 4. Estimated air changes per hour (ACH) and ventilation rate for a 7m x 6m x 3m ward

Openings	ACH	Ventilation rate (l/s)*
Open window (100%) + open door	37	1300
Open window (50%) + open door	28	975
Open window (100%) + closed door	4.2	150

* L/s (Litres per second) | Source: (WHO, 2009)



4. Low-energy appliances



Vaccine refrigeration needs are projected to increase 8-10 times by 2030. that demand can only be met with greater reliance upon solar technologies.

Solar, direct-drive fridge in Viet Nam:.

WHO/Path "Project Optimize" renewable energy initiative in three countries: Viet Nam, Tunisia and Senegal.

5. Low energy medical devices



Rapid Diagnostics for HIV/malaria and congenital syphilis & more recently, LED fluorescence TB smear microscopy are just a few examples. (Photo: DFID)

Analysis drawn from WHO's: *Health in Green Economy series*

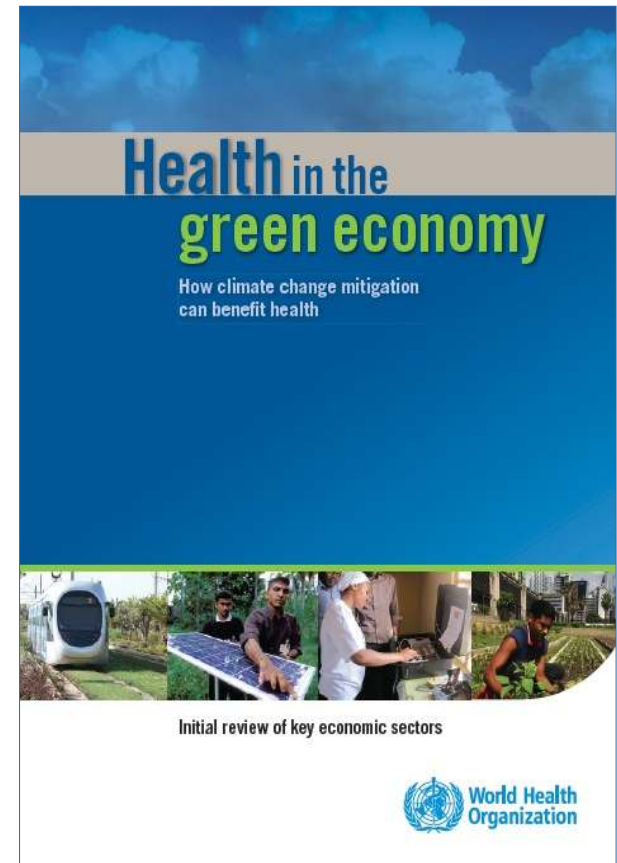
*Energy and environmental
performance in health facilities*

- **Global review of over 500 published reports and journal articles**
- **Synthesis of available data on energy access in health facilities**

Lead authors: Walt Vernon, M+NLB; Susan Wilburn/WHO;

Scientific editor; Elaine Fletcher;

Data analysis: Sophie Bonjour, Heather Adair-Rohani & Ryan Hebert



A photograph of five children sitting on the ground at night, illuminated by two bright yellow solar lamps. They are looking at open books, suggesting a night school or reading session in a rural area. The children's shadows are cast onto the wall behind them.

**Health as a
measure of our
Sustainable
Development
'vision'...**

The Health Sector can lead with *evidence* and *indicators* of Sustainable Development

- Evidence on health impacts of green economy strategies/innovations
- Wider use of Health Impact Assessment (HIA) to ensure health as an outcome of policies
- Define health-relevant goals, indicators, and tools for measuring/monitoring results



Health Metrics - Examples of indicators for Health and Sustainable Development

Sustainable Cities:

% of urban population exposed to air pollution above recommended WHO Air Quality limits.

Safe and Healthy transport:

% of the population with access to (living within 1km) rapid transit/public transport.

% of urban roadways with dedicated walking and cycling infrastructure.

Energy - % of households using clean fuels/cooking and heating technologies.

Green jobs - % of workplaces/jobs meeting basic occupational health and safety standards – including air, water, exposure to chemicals and radiation, lighting & ventilation.

Water - % of global population with access to climate resilient safe drinking water and improved sanitation.

Food - % of population with access to healthy foods, % undernourished; % obese; % inadequate micronutrients and dietary balance.

Health care – % of health care facilities with access to clean energy and water supplies.

Governance – % of large projects integrating health co-benefits considerations into their planning and implementation, e.g. through a health impact assessment (HIA).

Why green the health sector? – *lighting the way forward*

- Provide access to sustainable energy and water
 - 26% of health facilities in SSA without electricity
- Reduce Carbon footprint
 - The NHS-England represents 25% of the public sector footprint
 - Hospitals in Europe average 5% and in US 8% of the carbon footprint
- Manage waste
- Protect patient and health workers



All LED lighting in new "Green and Safe" hospital in Changchun, China saves \$80,000USD power expense annually.

Clean Med 2015 – Geneva?

- What will you begin today? Tomorrow?
- What transformation and innovations will you showcase?
- How can you inspire UN bureaucracies and your peers to take the next step towards sustainable health?



“Whatever you can do or dream you can, begin it. Boldness has genius, and magic and power in it. Begin it now.” –

Goethe



World Health Organization