GLOBAL GREEN and HEALTHY HOSPITALS

a project of the campaign for environmentally responsible health care
WWW.NOHARM.ORG

Health Care Without Harm

First, Do No Harm

Roles and Responsibilities of the Health Sector in the Protection of the Environment

Faye V. Ferrer

Coordinator, Global Green and Healthy Hospitals

Health Care Without Harm – Asia

Session II : Hospitals and Sustainable Practices

Eco-Friendly Hospitals for A Sustainable World, 22 February 2016

- An international environmental and health organization and a **global coalition** of more than 500 organizations in 52 countries
- Working to transform the health care sector worldwide to be **ecologically sustainable**
- Health sector as a **leading advocate** for environmental health and justice
- Two core principles:
  - **The right to health**
  - **The right to a healthy environment**

The health sector environmental footprint

Greenhouse gas emissions

- NHS-England represents 25% of the public sector carbon footprint
- U.S. health care industry represents 8% of their carbon footprint nationally

The incineration of medical waste

- Source of dangerous air pollutants: dioxin (carcinogen and endocrine disruptor) and mercury (neurotoxicant, retards development, intelligence)

The use of hazardous chemicals indoors

- Contributes to the high rates of asthma among health care workers
- Reproductive hazards, carcinogens, mutagens

The huge scale of the health care sector results in unhealthy practices

- Poor waste management
- use of toxic chemicals
- unhealthy food choices
- reliance on polluting technologies

Extent of the problem of medical waste

Harhay *et al*. (2009) Tropical Medicine and International Health 14(11): 1414-1417

"Over half of the world's population are now at risk from occupational, environmental or public health threats from improperly treated medical waste."

Healthcare waste management: a human rights issue

- Right of access to information
- Right to a clean environment
- Right to a safe working environment
- Right to life and health

- See HCWH report:

Stringer et al. (2011)Waste and Human Rights Submission to the UN Human Rights Council Special Rapporteur, http://noharm.org/lib/downloads/waste/MedWaste_Human_Rights_Report.pdf

International guidance on waste treatment technologies

World Health Organisation

- 2004 policy: scale up steam-based treatment
- Blue Book Second edition, 2014: priority for non-incineration

Stockholm Convention:

- waste incinerators are specifically identified as potential sources of highly toxic dioxins and furans.
- guidelines on medical waste states that “priority consideration should be given to alternative processes” that do not generate dioxins and furans

Basel Convention:

- 2003 Guidance: prefer steam based treatment

Human Rights Council 2011

- Substitution of incineration with alternatives wherever practicable

UNEP Compendium published September 2012

Compendium of Technologies for Treatment/Destruction of Healthcare Waste

http://www.unep.org/ietc/Portals/136/News/Publication%20of%20Healthcare%20Waste%20compendium%20of%20technologies/Compendium_Technologies_for_Treatment_Destruction_of_Healthcare_Waste_2012.pdf

Examples of Non-Incineration Technologies Demonstrated by the GEF/UNDP Project in Different Countries

Vietnam: large autoclave

Lebanon:
hybrid autoclave

Latvia: microwave

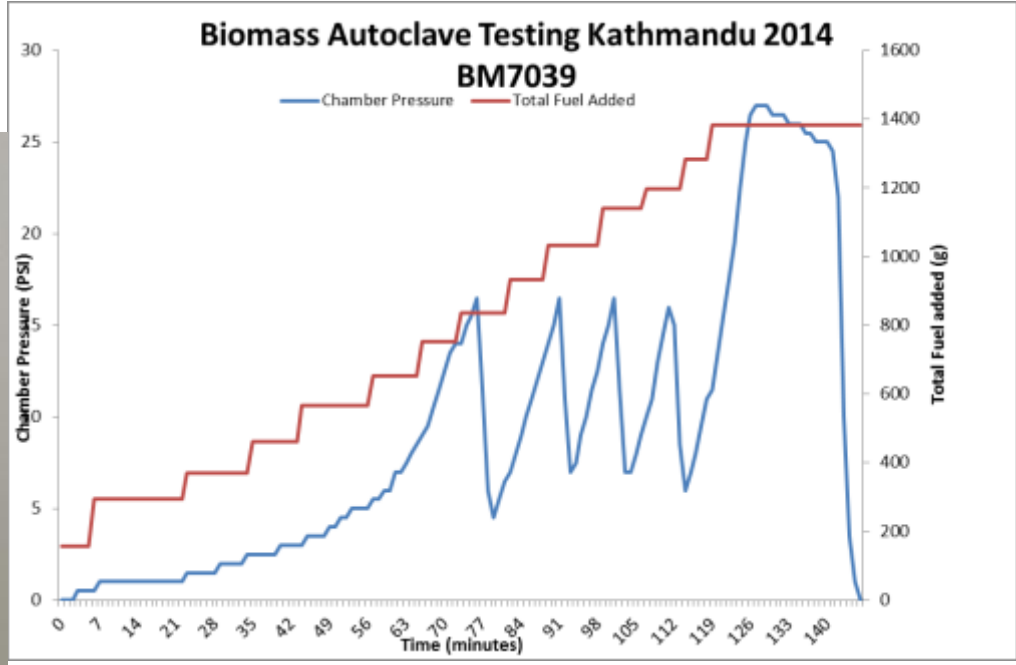
Latvia: rotating autoclave

New affordable non-incineration technology now available for Africa- already installed in Ebola Treatment Units

- Multiple vacuum autoclave with sterilization at 134 deg C
- Manufactured by Medi-Clave Pty Ltd (Pretoria, RSA)
- Developed in collaboration with the GEF/UNDP Project
- 175 liters per cycle, 1 to 1.5 hours per cycle
- Dimensions: 1.1m x 1.5m x 2m high
- Certified to meet or exceed international autoclave standards (ASME, STAATT)
- Includes boiler, all stainless steel construction
- Easy sliding door
- Special trolley with barrel to collect waste; the whole barrel slides into the autoclave to be sterilized

- Vulnerable electronics replaced with mechanical controls
- After treatment, the barrel can rotate to dump out treated waste

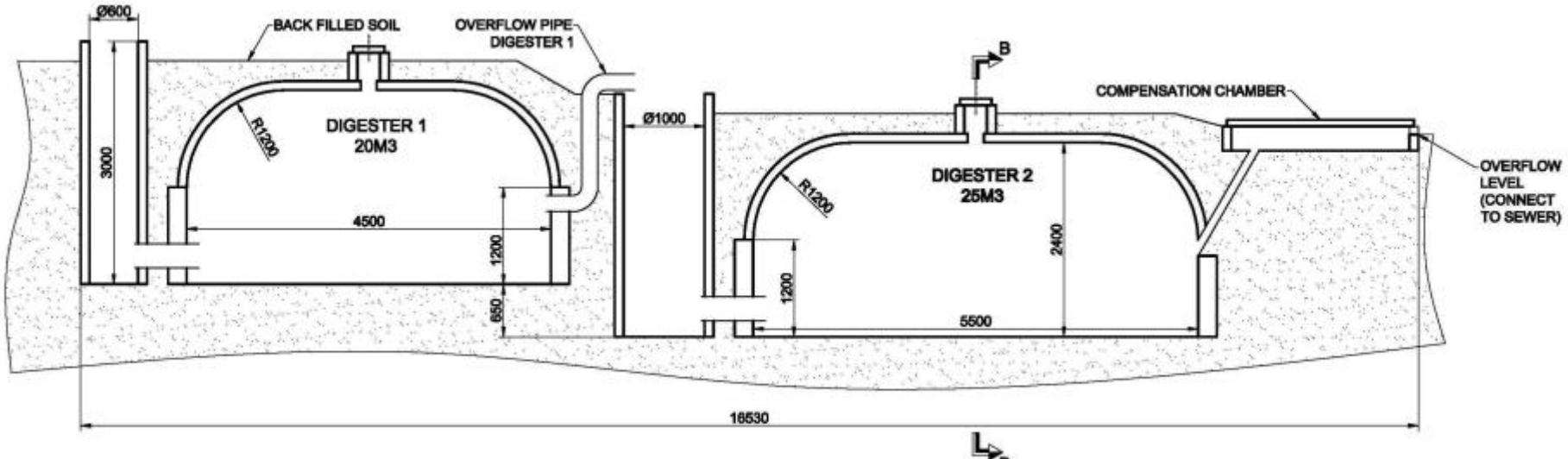
Biomass fired autoclave



- Gasket-less aluminium autoclave set into a high efficiency biomass cook-stove
- Potential for disinfecting waste in remote areas and post-disaster situations
- Being tested in Kathmandu May/June 2014
- Effective with wood, and various biomass briquettes
- 60 litres of waste can be disinfected with as little as 800g of fuel.

Biodigestion

- Breaks down organic waste to produce methane- a renewable fuel
- Bir hospital uses biodigestion for food waste
- Potentially able to dispose of pathological waste
- Pilot in development for Kathmandu Maternity Hospital
- -2 chamber design to maximise reaction time
- Will monitor pathogens, temp pressure, pH etc, to prove how effective the technology can be and optimise conditions



Vermiculture

- Worms can both eat organic materials and inactivate pathogens.
- Potential applications – soft waste in remote areas, or for diapers in places with poor municipal waste disposal systems.
- Facility level autoclaves have trouble disinfecting diapers
- Project under way with SPH Cavite, Philippines
  - Stage 1 has proven that worms can destroy pathogens, but composting does not
  - Stage 2 will monitor worm bins with diapers and supplemental organic waste to demonstrate pathogens removal under different situations

Healthcare Waste Treatment Technologies Database

Health Care Without Harm

Home | The Issue | The Database | F.A.Q. | Stay Informed | Contact Us

The alternatives database is a web tool, developed by the Health Care Without Harm Global Team, to help staff responsible for procuring healthcare waste treatment technologies to identify alternatives to incinerators.

Search the Medical Waste Devices Database

Select Country | Select Technology | Select Capacity kg/h

Advanced Treatment System

Designed for healthcare waste

+ Search options

Search

www.medwastealternatives.org

MERCURY-FREE HEALTH CARE

An Initiative to Substitute Mercury-based Medical Devices Around the World.

World Health Organization

Health Care Without Harm

www.mercuryfreehealthcare.org

Hazardous Chemicals in Health Care

Hospital Uses	Health and Environmental Concerns
Disinfectants & Sterilants	• Glutaraldehyde is a potent occupational skin irritant and causes asthma. • Ethylene oxide is flammable and explosive, a probable human carcinogen, a toxic air contaminant, and an ozone depleter. • Chemicals designed to kill biological organisms like pesticidal cleaners can be very toxic to humans and ecosytems.

Hospital Uses	Health and Environmental Concerns
Cleaning Agents	• Chlorine bleach (sodium hypochlorite), can in some circumstances liberate chlorine gas, a respiratory irritant and sensitizer. • Surfactants such as alkylphenol ethoxylates degrade into nonylphenol, which is toxic to aquatic wildlife; ethanolamines can cause asthma. • Some cleaners may contain chemicals that cause cancer, reproductive disorders, respiratory ailments, eye and skin irritation, central nervous system impairment, etc.

Hospital Uses	Health and Environmental Concerns
Laboratory Chemicals	• Toluene is neurodevelopmental toxicant. • Formaldehyde is a carcinogen. • Laryngitis, bronchitis or bronchial pneumonia, conjunctivitis may be developed through chronic exposure to laboratory chemicals.

Hospital Uses	Health and Environmental Concerns
Medical Devices	• PVC manufacture and incineration generate dioxins, chlorinated organochlorines. • DEHP, an additive to PVC, can damage the liver, kidneys, lungs and reproductive system, particularly developing testes, according to animal studies. • In animal studies, BPA is associated with alteration in breast, prostate, and brain development, changes in behavior, and susceptibility to breast and prostate cancer. Human studies find a direct association with risk of diabetes and heart disease.

The Health Sector Helps Drive Transformational Change

Hospitals Can Lead by Example and Promote Public Health by Reducing their Environmental Footprint

Hospitals Around the World Are Already Going Green

Global Green and Healthy Hospitals Agenda: 10 Goals


Leadership


Chemicals


Waste


Energy


Water


Transportation


Food


Pharmaceuticals


Buildings


Purchasing

Building the Global Green and Healthy Hospitals (GGHH) Network

A worldwide community of hospitals, healthcare systems and organizations dedicated to reducing the ecological footprint of healthcare operations, while promoting environmental and public health in their communities.

GGHH Objectives

1. To serve as a vibrant virtual community for hospitals and health systems seeking to reduce their environmental footprint.

2. To chart progress in achieving measurable outputs, while sharing best practices, finding solutions to common challenges, and raising the bar.

3. To mobilize health care around the world to work together toward and advocate for greater environmental health, locally and globally.

Categories of Membership

Hospital Members

Health System Members

Health, Professional and Academic Organizations Members

Membership in GGHH is free of charge.

Partners and Relationships

Health Care Without Harm

GLOBAL GREEN and HEALTHY HOSPITALS

IPEN

UNEP

Pesticide Action Network NORTH AMERICA

World Federation of Public Health Associations

WMA

UNDP GEF GLOBAL HEALTHCARE WASTE PROJECT

JSI

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF HEALTH

World Health Organization

CONSEIL INTERNATIONAL DES INFIRMIÈRES · CONSEJO INTERNACIONAL DE ENFERMERAS · INTERNATIONAL COUNCIL OF NURSES

SALUD
SECRETARÍA DE SALUD

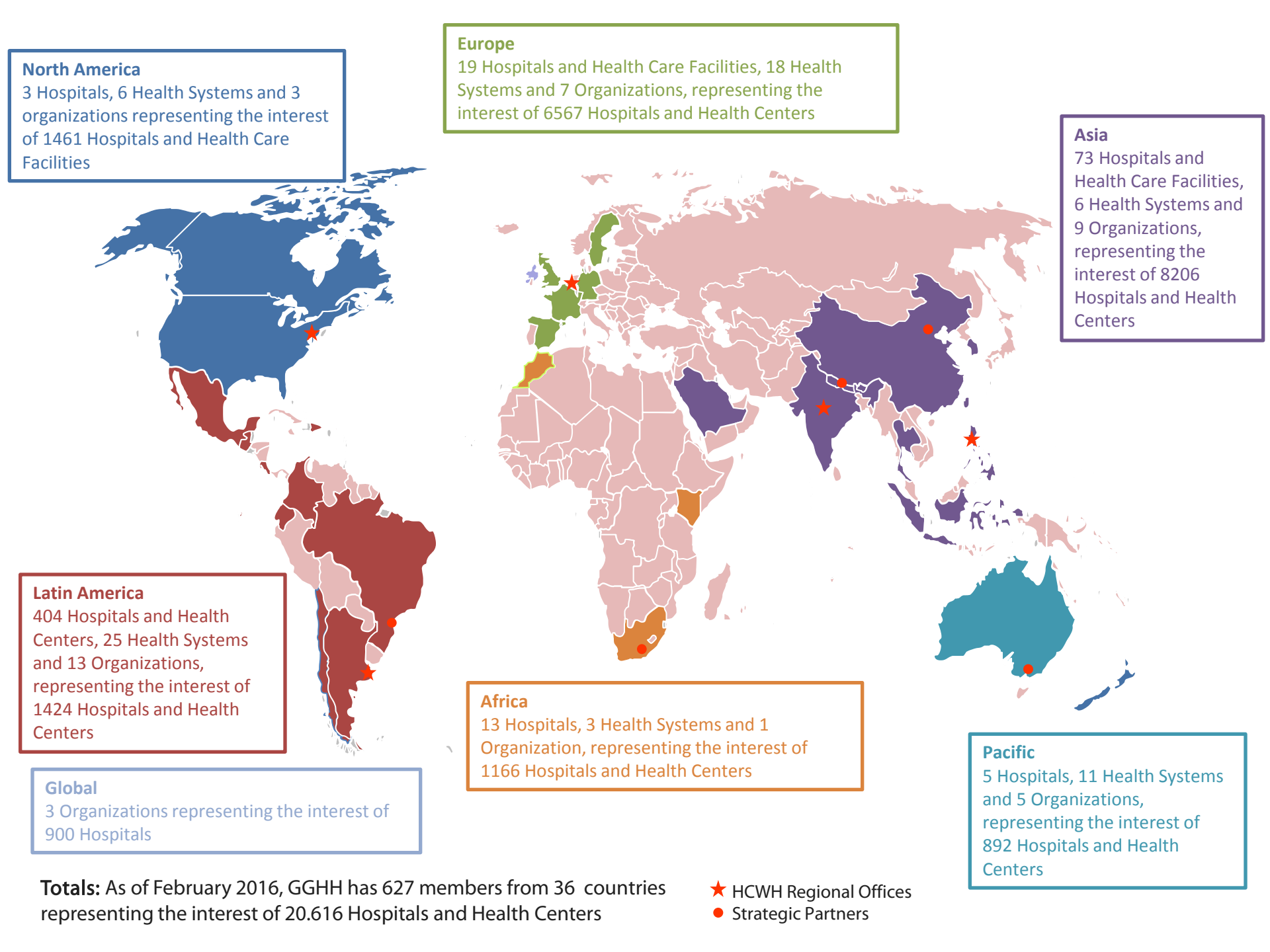
fhi Family Health International
Improving lives worldwide

Asociación Toxicológica Argentina
30 años, construyendo el conocimiento de la toxicología para una mejor calidad de vida
1979 2009

Ministerio de Salud
Presidencia de la Nación

PHILIPPINE NURSES ASSOCIATION, INC.
Member: International Council of Nurses
Most outstanding accredited professional organization for 2003

The United Republic of Tanzania
Ministry of Health and Social Welfare


North America
3 Hospitals, 6 Health Systems and 3 organizations representing the interest of 1461 Hospitals and Health Care Facilities
Europe
19 Hospitals and Health Care Facilities, 18 Health Systems and 7 Organizations, representing the interest of 6567 Hospitals and Health Centers
Asia
73 Hospitals and Health Care Facilities, 6 Health Systems and 9 Organizations, representing the interest of 8206 Hospitals and Health Centers
Latin America
404 Hospitals and Health Centers, 25 Health Systems and 13 Organizations, representing the interest of 1424 Hospitals and Health Centers
Africa
13 Hospitals, 3 Health Systems and 1 Organization, representing the interest of 1166 Hospitals and Health Centers
Pacific
5 Hospitals, 11 Health Systems and 5 Organizations, representing the interest of 892 Hospitals and Health Centers
Global
3 Organizations representing the interest of 900 Hospitals
Totals: As of February 2016, GGHH has 627 members from 36 countries representing the interest of 20.616 Hospitals and Health Centers
HCWH Regional Offices
Strategic Partners

Members

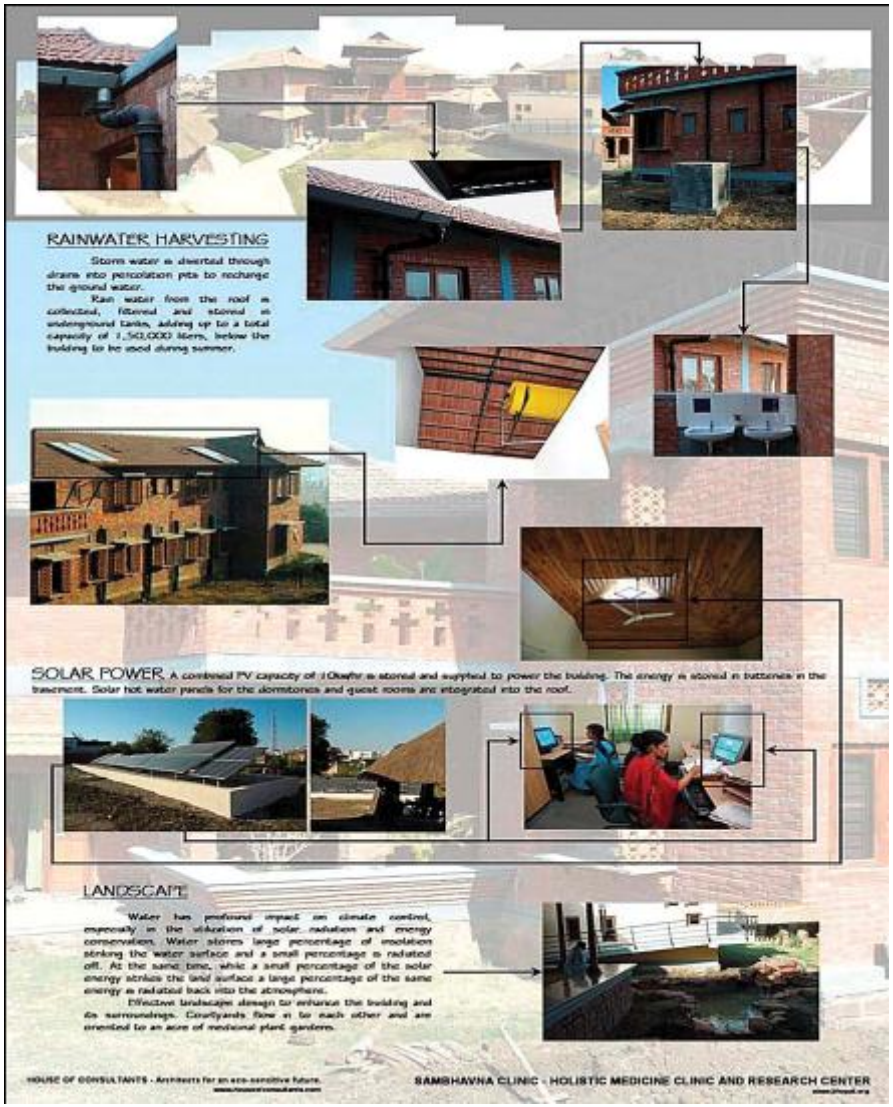
Asia

- Bahrain, Bhutan, China, India, Indonesia, Kuwait, Nepal, Philippines, Singapore, Saudi Arabia, South Korea, Thailand, Taiwan

- Membership breakdown – 73 Hospitals, 6 Health Systems, 9 Organizations representing the interest of 8206 Hospitals and Health Centers

Sambahvna Trust Clinic,Bhopal, India

- Green Building: solar power
- Food – Provide sustainably grown local food for staff and patients
- Water – Rainwater harvesting, water conservation



GREEN and CLEAN Hospitals:

A Strategy for Reducing Global Warming

Thailand

GREEN activities

- Garbage
- Restroom
- Energy
- Environment
- Nutrition

CLEAN strategies

- Communication for creating good understanding and awareness.
- Leadership for starting a prototype project and resolving any problems.
- Effectiveness enhancement to achieve the target.
- Activity creation with strengthened cooperation.
- Networking for all hospitals to share and learn among themselves

Department of Medical Services, Ministry of Health, Bhutan

Saint Paul de Chartres Health Care Ministry, Philippines

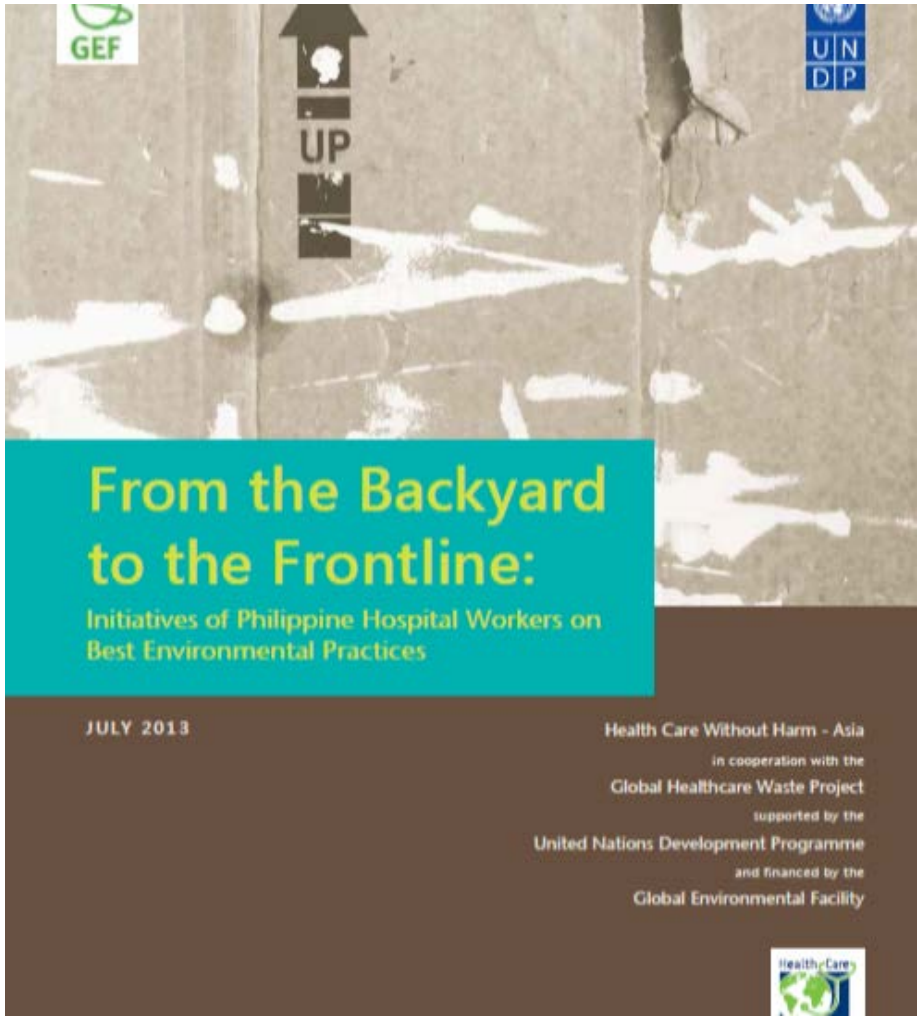
16-hospitals owned and administered all over the country

- Mercury & Chemicals Substitution
- Autoclave waste
- Vermiculture
- Food cultivation
- Waste Water Treatment
- Solar AC
- Hospital Biodigester

Philippine Hospital Good Practices

- Waste Management
- Chemicals Management/Mercury Phase-out
- Waste Water Treatment
- Safer Alternatives to Cleaning
- Hospital Biodigester

http://web.undp.org/gef/document/From%20the%20Backyard%20to%20the%20Frontline.pdf



Green Hospitals Initiative, Mongolia

Improving Health Care Waste Management

Mercury Free Health Care Initiative

National Cheng Kung University Hospital, Taiwan

Energy

- ✓ Lighting System Renovation
- ✓ Heat Pump Hot Water System
- ✓ Air Conditioning Renovation

Total annual savings:

- 5259 tons of C02
- $625,000

Severance Hospital, Korea

Energy

- Expense reduction in 2011: 1,901,686,000 won ($1,730,000)

- GHG emission reduction: 5,316 tons of CO2

Bir Hospital, Kathmandu, Nepal

- Waste Management
- Chemicals Management/Mercury Phase-out
- Hospital Biodigester

GLOBAL GREEN and HEALTHY HOSPITALS

Member Resources and Tools

GLOBAL GREEN and HEALTHY HOSPITALS

WWW.GREENHOSPITALS.NET

a project of WWW.NOHARM.ORG

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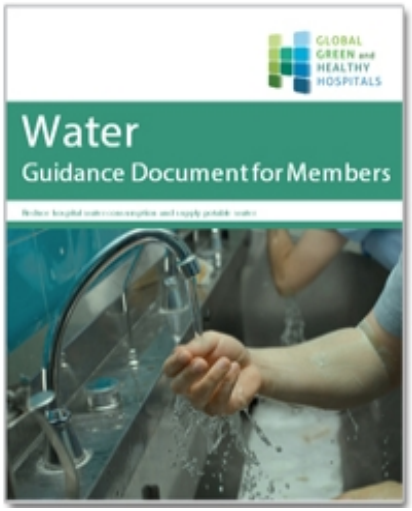
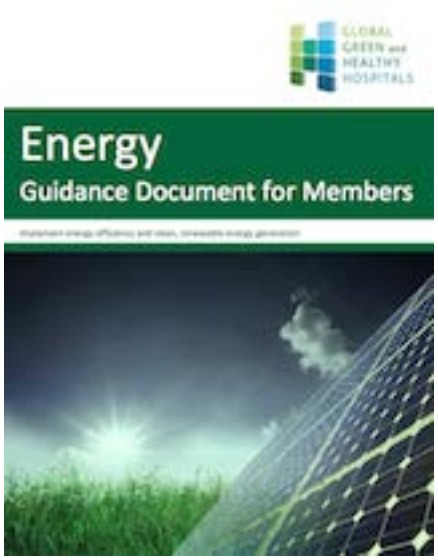
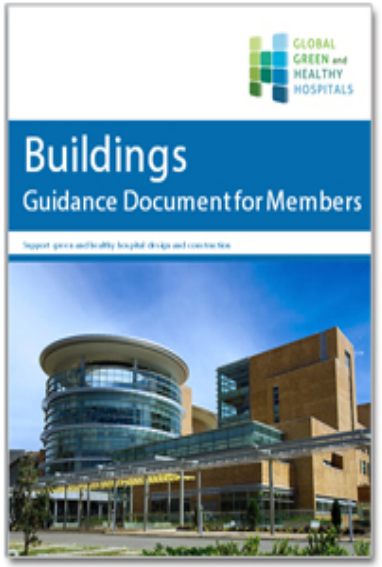
Guidance Documents

-Comprehensive **overview/global perspective** of each goal
-Suggested **action items and related projects**
-**Strategies and tips** for implementation
-Additional resources for **learning/ research**







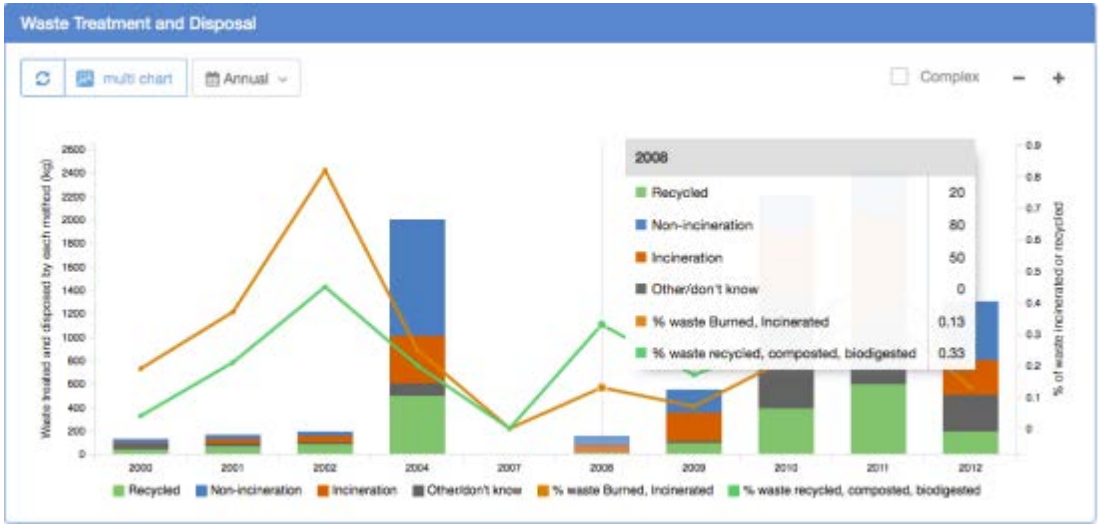
Webinars

- **Water: Methods and Tools for Sustainable Management and Conservation in the Health Sector**
- **Buildings : Green Design and Construction of Hospitals**
- **Ebola and Health Care Waste: Lessons from West Africa**
- **Combating Climate Change: Health Care Leadership and the #2020Challenge**
- **Sustainable Health Care Waste Management: Strategies and Experiences**
- **Health and Climate Change: The Lancet Commission Report**
- **Health Impacts of Energy Choices: Opportunities for Health Sector Leadership**

New in 2016- Data forms and checklists

Health care waste tracking tool

- Launching in first quarter of 2016
- Track and visualize all types of health care waste and recycling from your facility



Waste Treatment and Disposal

Annual

Complex

Variables	2000	2001	2002	2004	2007	2008	2009	2010	2011	2012
Recycled	50	70	90	500	0	20	100	400	600	200
Non-incineration	40	30	40	1000	0	80	200	300	400	500
Incineration	10	40	50	400	0	50	240	500	800	300
Other/don't know	30	20	10	100	0	0	10	1000	600	300
% waste Burned, Incinerated	0.190	0.370	0.820	0.250	0.000	0.130	0.070	0.220	0.380	0.130
% waste recycled, composted, biodigested	0.040	0.210	0.450	0.200	0.000	0.330	0.170	0.280	0.500	0.200


GGHH
connect

GGHH CONNECT- Communities

Communities dedicated to each of the 10 GGHH Agenda goals with:

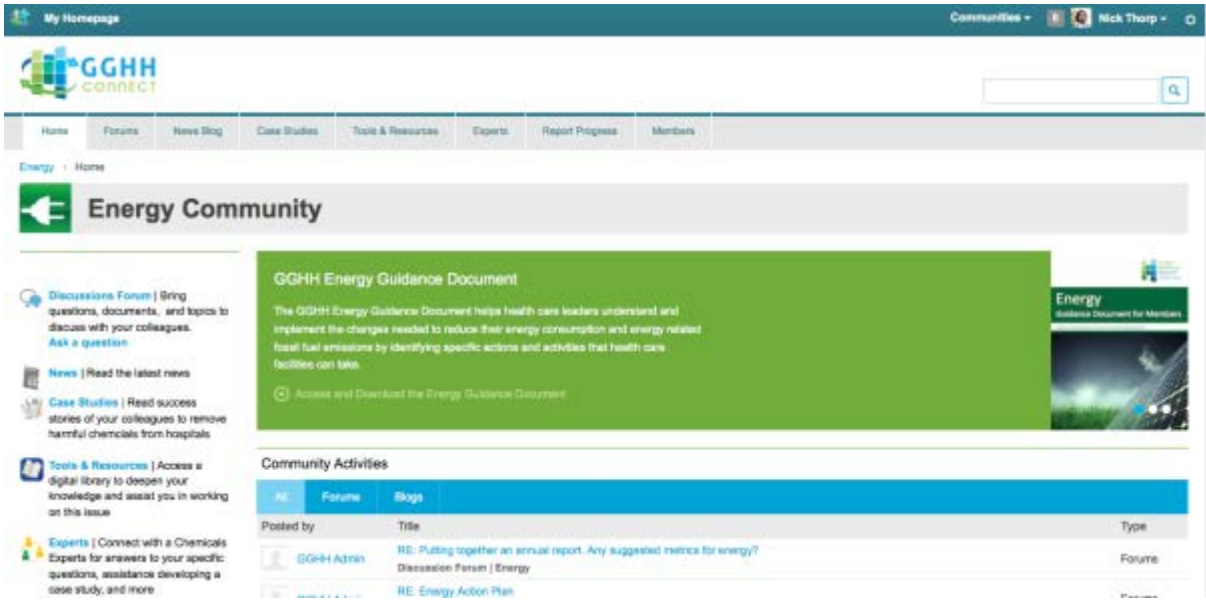
-Discussion Forums

-Global Teams of Experts

-Tools and Resources

-Case Studies

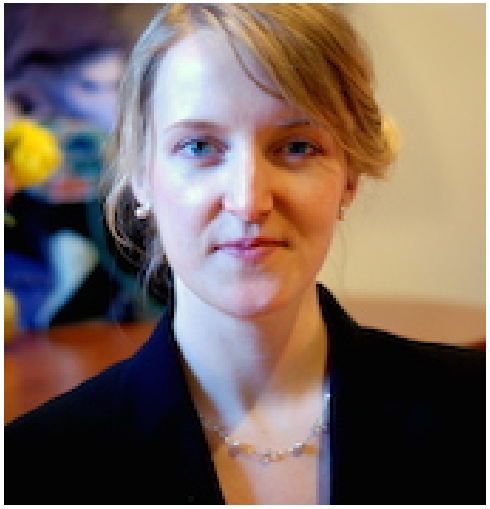
-Multi-lingual capability



Regional Contact

Faye Ferrer - GGHH Coordinator (faye@no-harm.org)
Moresa Tolibas - Sustainability Coordinator (moresa@no-harm.org)
Dianne Mendoza - Social Steward (dianne@no-harm.org)

Experts



Regional Community

GGHH Connect- Discussions

How can I integrate green building design into a new hospital we are planning to build?

GGHH Exchange

GLOBAL GREEN and HEALTHY HOSPITALS

Health Care Without Harm

2020 HEALTHCARE Climate Challenge

The Challenge is based on three pillars:

- **Mitigation** – Reducing health care's own carbon footprint.

- **Resilience** – Preparing for the impacts of extreme weather and the shifting burden of disease.

- **Leadership** – Educating staff and the public while promoting policies to protect public health from climate change.

Awards Categories:

- Energy Greenhouse Gas Reduction Award
- Energy Efficiency Award
- Renewable Energy Award
- Non-Energy Greenhouse Gas Reduction Award
- Climate Resiliency Award
- Climate Leadership Award

Awards Categories:

- Energy Greenhouse Gas Reduction Award
- Energy Efficiency Award
- Renewable Energy Award
- Non-Energy Greenhouse Gas Reduction Award
- Climate Resiliency Award
- Climate Leadership Award

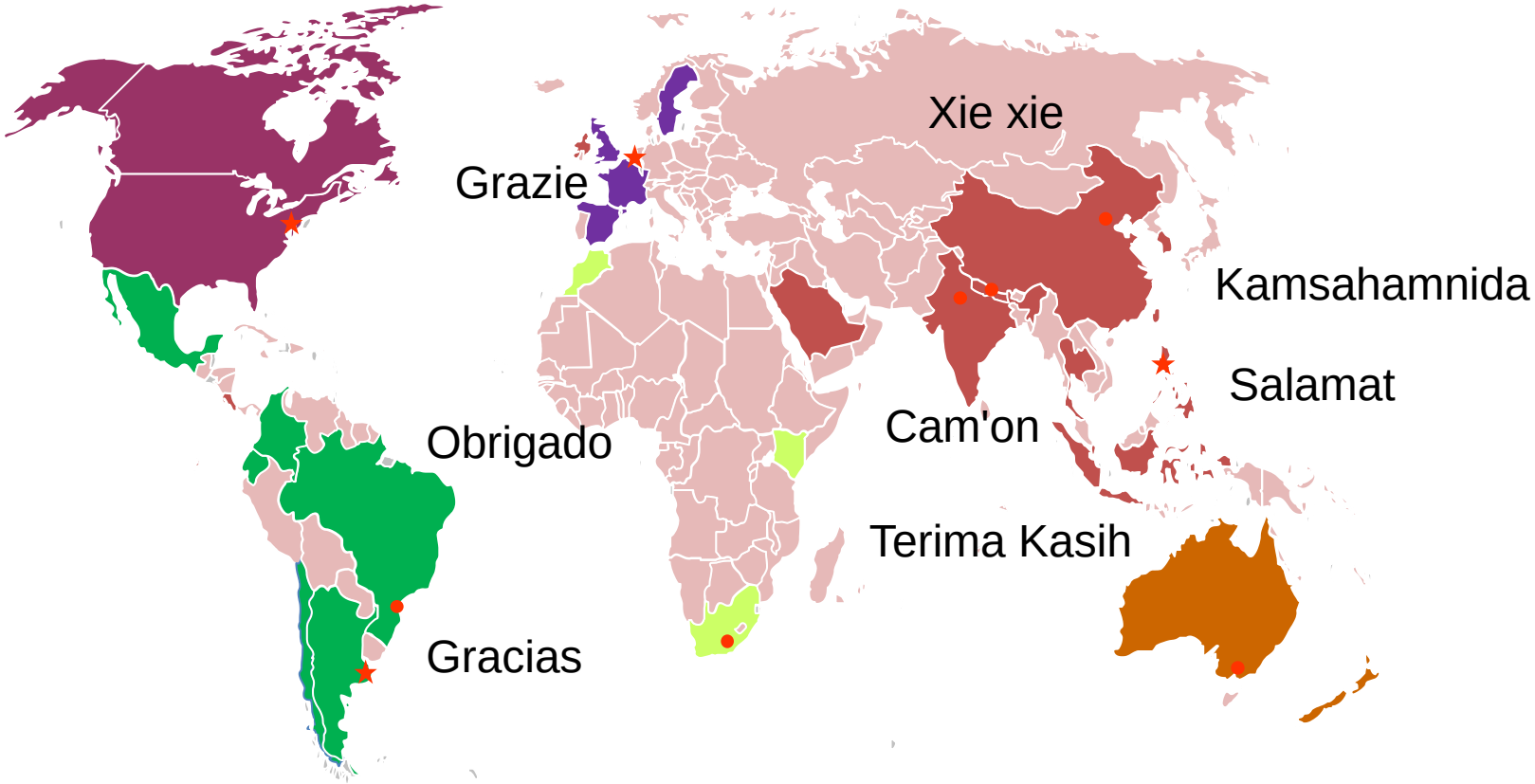
2015 Health Care Climate Champion Award
ASIA

Dalin Tzu Chi Hospital, Taiwan
- SILVER- Climate Resiliency
- GOLD- Climate Leadership

Guanshan Tzu Chi Hospital, Taiwan
- SILVER- Climate Resiliency

Taichung Tzu Chi Hospital, Taiwan
- GOLD- Climate Resiliency

http://greenhospitals.net/en/gghh-announces-2015-award-winners-in-the-2020-health-care-climate-challenge/


Xie xie
Grazie
Kamsahamnida
Salamat
Cam'on
Obrigado
Terima Kasih
Gracias

THANK YOU

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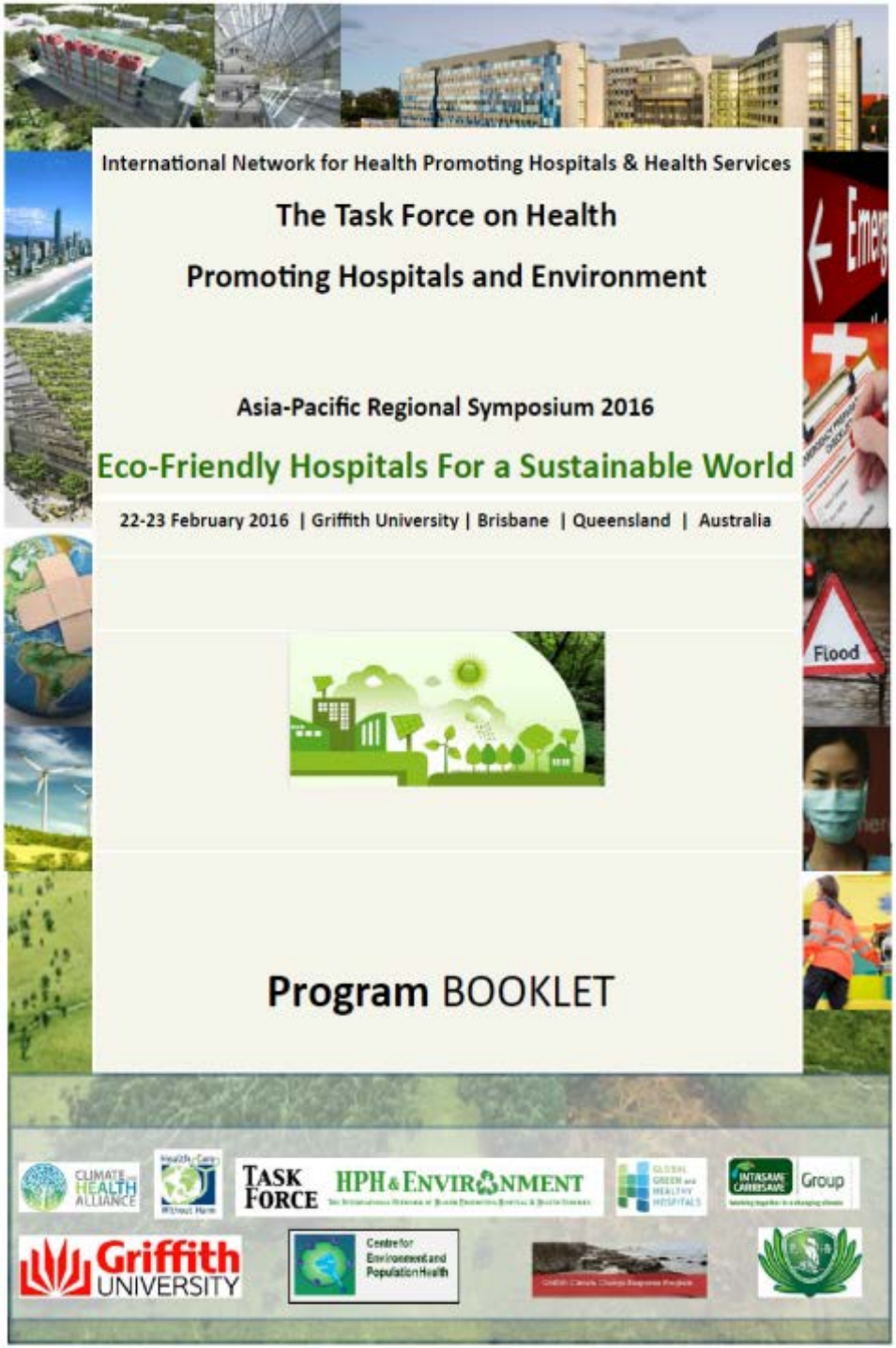

AN INTERNATIONAL KNOWLEDGE AND PRACTICE-SHARING REGIONAL SYMPOSIUM ON

"ECO-FRIENDLY HOSPITALS FOR A SUSTAINABLE WORLD"
MONDAY, 22nd Feb 2016

Griffith University, Nathan Campus

Hosted by The Task Force on Health Promoting Hospitals and Environment
of International Health Promoting Hospitals and Health Services Network
and co-hosted by Griffith University
Venue: Griffith University Nathan Campus, Building N18 (Central Theatre), Theatre II

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