

**Thematic Debate of the General Assembly
“Water, Sanitation and Sustainable Energy
In the post 2015 development agenda”**

18-19 February 2014

Background

Water, sanitation and sustainable energy are at the core of sustainable development and the overarching goal of poverty eradication, and are closely linked to the achievement of internationally agreed development goals, including the Millennium Development Goals (MDGs).

Water and energy are also intimately linked in sustainable consumption and production patterns, and this relationship aggravates resource scarcity and conservation.

Achieving universal access to safe drinking water, basic sanitation and modern energy services is one of the greatest multifaceted development challenges confronting the world today. The role of women and girls is also important, as in many countries they bear the burden of the provision of water and fuel for households and are susceptible to *inter alia* violence in the absence of adequate water and sanitation services. The post 2015 development agenda will have to respond to these challenges in a manner that allows both developed and developing countries to forge endogenous pathways that build resilience, contribute to the eradication of poverty and lead to sustainable development.

The Water and Sanitation Challenge

Achieving our sustainable development objectives of poverty eradication and overcoming inequalities, while at the same time boosting and sustaining economic growth and development is reliant upon healthy freshwater ecosystems, reliable water service provision and adequate sanitation services. Uncertain water availability is a challenge faced by many countries that can impact on economic growth, gender equality and sustainable development. The ‘water and sanitation challenge’, and its links to sustainable development, has multiple dimensions, one of which is access to safe drinking water and basic sanitation services. Improved access has a direct positive impact on people and communities leading to significant social, economic and environmental benefits. Ongoing discussions have revealed a broad support for a Sustainable Development Goal (SDG) for water.

Addressing the water and sanitation challenge will require improvements in (i) the way we manage available fresh water resources in river basins; (ii) how efficiently and effectively we use and manage freshwater resources in agriculture, industry, and household use; (iii) how we dispose of it after use (wastewater management and related pollution); (iv) how we finance the investments required to improve water productivity; (v) how we balance the interdependencies between water and energy; (vi) how we reduce the risks of disasters such as flooding and drought; (vii) how we engage vulnerable populations in integrated management of the resource through the promotion of sustainable livelihoods (viii) how we take advantage of the potential for policy reform induced by increasing water scarcity.

The Sustainable Energy Challenge

Sustainable energy is a key enabler of sustainable development. No country has developed and will develop without access to reliable and affordable energy. Energy directly impacts on people, communities and countries in terms of economic growth, health, security, food and education. It also affects ecosystems and is linked to climate change. Disproportionate dependence on imported fossil fuels exposes many developing countries to volatile and rising oil prices, limits economic development, degrades local natural resources, and fails to establish a precedent for global action to mitigate the long-term consequences of climate change. Sustainable energy is thus a key enabler of sustainable development for all countries and all people. Ongoing discussions have revealed a broad support for a Sustainable Development Goal (SDG) addressing energy.

Meeting the growing demand for sustainable energy will require *inter alia* (i) stable national policy frameworks which *inter alia* foster investment, promotes sustainable consumption and production patterns and enables consumers to make wise choices and decisions; (ii) the promotion of energy efficiency and the removal of barriers to efficient production which addresses *affordability* – because less energy is needed, *security* – because it reduces dependence on imports and *sustainability* – because it reduces emissions; (iii) the promotion of a diverse mix of fuels and technologies, which supports the transition to a lower-carbon economy; (iv) providing an appropriate enabling environment for the healthy growth of renewables in the national energy mixes and (v) appropriate attention to be given to technology transfer to support national and global sustainable energy goals.

The interdependence between water and energy is also important to consider. Water is currently the third-largest industry in the global economy, after oil and electricity. Water is used to produce energy (hydro electric generation, drilling, mining and processing of fossil fuels, as a coolant in nuclear power plants, many green alternatives are water intensive to grow) and Energy is used to produce and distribute water (to extract, pump, treat, and deliver freshwater, and in desalination plants).

Objective

In building upon the deliberations undertaken in the Open Working Group on Sustainable Development Goals and other relevant fora, the thematic debate will provide an opportunity for participants to address key issues, such as:

- 1) What are the main challenges we are facing in the water, sanitation and energy sectors hampering the achievement of the MDGs and how can these challenges be tackled in an integrated manner in a post 2015 development agenda with the overarching goal of poverty eradication, including through goals and targets?
- 2) What concrete means of implementation (e.g finance infrastructure, human capacity, institutional reforms etc.) must governments, their international partners and other stakeholders undertake to ensure implementation?

- 3) How can ecosystem approaches, science and technology know-how, conservation measures and sustainable use be successfully utilized to increase action at all levels on water, sanitation and sustainable energy?

Format and Outcome

The thematic debate will take place on the 18-19 February, 2014, in New York. In accordance with the letter of the President of the General Assembly to Member States dated on December 5th, 2013, it will consist of an opening segment in the morning and three consecutive, interactive, multi-stakeholder panel discussions and a brief closing segment. A President's summary will be issued at its conclusion and will subsequently be made available to the Open Working Group on Sustainable Development Goals and the Intergovernmental Committee of Experts on Sustainable Development Financing for their consideration, as applicable.

Participants

The thematic debate will include participation of Member States at the highest possible level, Observers, UN Agencies and representatives of civil society, private sector, and other relevant stakeholders. Permanent Missions are invited to express to the President of the General Assembly their interest in co-chairing an interactive panel discussion.

Additional details of this thematic debate including draft program will be communicated at a later stage.

Background Paper
Thematic Debate of the General Assembly
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Introduction

Water, sanitation and sustainable energy are at the core of sustainable development and of the overarching goal of poverty eradication, and as such are closely linked to the achievement of internationally agreed development goals, including the Millennium Development Goals (MDGs). Water and energy are also intimately linked in sustainable consumption and production patterns, and this relationship aggravates resource scarcity and conservation. Involving all stakeholders, particularly women and the young, in the global effort to eradicate extreme poverty through the sustainable use of water and energy resources will be critical to the implementation of the post-2015 development agenda.

Achieving universal access to safe drinking water, basic sanitation and modern energy services is one of the greatest multifaceted development challenges confronting the world today. The role of women and girls is also important, as in many countries they bear the burden of the provision of water and fuel for households and are susceptible to inter alia violence in the absence of adequate water and sanitation services. The post 2015 development agenda will have to respond to these challenges in a manner that allows both developed and developing countries to forge endogenous pathways that build resilience, contribute to the eradication of poverty and lead to sustainable development.

Roundtable 1 The Water and Sanitation Challenge

Achieving our sustainable development objectives of poverty eradication and overcoming inequalities, while at the same time boosting and sustaining economic growth and development is reliant upon healthy freshwater ecosystems, reliable water service provision and adequate sanitation services. Uncertain water availability is a challenge faced by many countries that can impact on economic growth, gender equality and sustainable development. Demand for water is projected to increase by 50 per cent within the next 40 years, while competition for water among multiple users and uses is already escalating. Improved access has a direct positive impact on people and communities leading to significant social, economic and environmental benefits. Ongoing discussions have revealed a broad support for a Sustainable Development Goal that addresses the water and sanitation challenge. This will require that particular attention be paid to:

Access to safe drinking water and sanitation, which figures among the main priorities of many developing countries. 768 million people still do not have access to an improved drinking water source and 2.5 billion people currently lack access to improved sanitation.

The way we manage our water resource, which has a direct impact on drinking water supplies and public health outcomes. The hydrological cycle calls for integrated approaches to water management (IWRM) at the river-basin level and cooperation between different users, i.e. agriculture, industry and domestic water users.

Water use efficiency and conservation measures, which play an important role in addressing water scarcity concerns in times of climate change, urbanization and population growth. Sustainable production and consumption patterns play also an important role in this regard.

Water quality, which is as important to human health and the environment as water quantity. Water quality challenges are often poorly understood, monitored and addressed. 80% of all wastewater is currently being discharged without any treatment at all and it has been estimated that wastewater discharge will double by 2050. Good wastewater management practices can have a pivotal role in improving community well-being..

Water-related disasters, which are on the rise. It has been estimated that since the 1992 Rio Earth summit floods, droughts and storms have affected 4.2 billion people and caused USD 1.3 trillion of damage. Approximately 90 per cent of all disasters are water-related and the economic cost of water-related disasters extends well beyond immediate losses hindering development over decades. Water related hazards exacerbate inequalities and disproportionately impact poor and vulnerable communities.

The means of implementation should also be considered. Financing, technology transfer and development, capacity development as well as the creation of conducive enabling environments including policy reforms are needed to effectively deliver on water related development priorities. Upgrading of ageing water infrastructure also tends to be given low priority in many countries. Particular attention should be devoted to finding innovative means of financing infrastructure upgrades. An option that is slowly growing in many countries is public-public partnerships (PUPs) also known as twinning.

Water is a powerful tool for cooperation across borders, sectors and communities. Proper water governance holds the potential of avoiding increased competition for water between sectors and an escalation of water crises of various kinds, triggering emergencies in a range of water-dependent sectors. Water is a key factor in managing risks.

Suggested questions to stimulate discussion:

- What are the major obstacles to achieving universal access to safe drinking water and sanitation services? According to you, what critical challenges have been not adequately been addressed by the MDG framework?
- What critical gaps does the international community need to address in order ensure the sustainability of the world's water resources? How can the challenges of drinking water supply and sanitation on the one hand, and water resources management on the other be tackled in an integrated manner?
- How can partnerships with the business community contribute to address issues related to water pollution, water quality and sanitation in the future?
- Ongoing discussions in the Open Working Group on SDGs and in other fora have revealed a broad support for a Sustainable Development Goal for water. How could a possible global goal on water look like? What could be appropriate targets for such a goal?
- What concrete means of implementation (e.g finance, infrastructure, human capacity, institutional reforms etc.) must governments, their international partners and other stakeholders undertake to ensure concrete and lasting outcomes?

Roundtable 2 The Energy Challenge

Energy is central to sustainable development. No country has developed without access to reliable and affordable energy. Energy directly impacts on people, communities and countries in terms of economic growth, health, security, food and education. It also affects ecosystems and is directly linked to climate change. Sustainable energy is thus a key enabler of sustainable development for all countries and all people. Ongoing discussions have revealed a broad support for a SDG addressing the energy challenge.

Addressing the energy challenge will require that attention to paid to:

Accessibility to and affordability of modern energy services, which are the main priorities for many developing countries (in particular the Least Developed Countries) and for 2.8 billion people still depending on solid biomass and animal waste for cooking and heating and 1.4 billion still without electricity.

Development of national integrated sustainable energy systems and programmes that support energy efficiency (both in the energy demand and supply sides), fuel diversification including optimization in the use of indigenous resources, and the promotion of renewable energy for transition to lower-carbon economies.

Stable national policies and effective international cooperation that support critical means of implementation including investment, technology transfer, capacity development and regional integration necessary for pursuing national and global sustainable energy goals such as reduction of global carbon emissions and sustainable consumption and production. Addressing the energy challenge requires measures and goals at all levels combining access, efficiency and sustainability.

Suggested questions to stimulate discussion:

- How does the absence of sustainable energy services affect the global and national goals of sustainable development and poverty eradication? How does this factor affect other development goals? What are good examples of countries that have achieved full access and affordability to modern energy services? What national policies and international cooperation programmes have been successful in promoting energy accessibility and affordability?
- What are the costs associated with the implementation of energy efficiency programmes and how do they compare to alternative options such as the expansion of energy services and systems? What are the impacts of fuel diversification and energy efficiency on energy security, energy affordability and on the environment? What role can renewable energy technologies play in support of rural energy access?
- Ongoing discussions in the Open Working Group on SDGs and in other fora have revealed a broad support for a Sustainable Development Goal on energy. How could a possible global goal on energy look like? What could be appropriate targets for such a goal?
- What are the national policies that could support the necessary investment for sustainable energy systems and infrastructures? What innovative investment mechanisms can be used? How can international organizations support technology transfer and capacity development for sustainable energy development? How can regional integration support energy efficiency and technical cooperation?

Panel 3 The Water Energy Nexus

Energy production depends on water. It is used in power generation, primarily for cooling thermal power plants; in the extraction, transport and processing of fuels; and, increasingly, in irrigation to grow biomass feedstock crops. Energy is also vital to providing freshwater, needed to power systems that collect, transport, distribute and treat it. Each resource faces rising demands and constraints in many regions as a consequence of economic and population growth and climate change, which will amplify their vulnerability to one another.

Water constraints can occur naturally, as in the case of droughts and heat waves, or be human-induced, as a result of growing competition among users or regulations that limit access to water. Equally important to water-related risks confronted by the energy sector, the use of water for energy production can impact freshwater resources, affecting both their availability (the amount downstream) and quality (their physical and chemical properties).

Development of an analytical framework for the systematic and comprehensive assessment of the major links that exist between water and energy has potentially significant benefits for sustainable development and poverty eradication.

Developing policies that allow multi-sectoral investments and (technical & service delivery) designs that are not tied into strict sectoral silos and budgets and thus allow multiple-use of water systems would unlock potential. Community-managed decentralized systems that combine drinking water, small hydro-power (water mills or electronic mills + electricity) and irrigation (community-managed) provide multiple-services and opportunities to address livelihoods in vulnerable remote locations.

Managing water and energy resources in tandem offers important social, economic and environmental benefits but simultaneously presents institutional challenges. Political institutions and policies are lagging behind concepts, such as integrated energy and water evaluation and planning systems or integrated water resources management and benefit sharing.

Long-term national policies and effective international cooperation are necessary for the development of innovative global and national water-energy integrated frameworks and programmes. Means of implementation including investment, technology transfer, and capacity development are necessary for pursuing robust national and global water, energy and sanitation goals.

To avoid overexploitation and minimise trade-offs within the water energy nexus, the world must become vastly more efficient in the way it consumes resources.

Suggested questions to stimulate discussion:

- What components are needed for an effective analytical framework to guide nexus approaches? What are the lessons learnt from the existing models for addressing nexus interactions and how can these be adapted for developing country systems?
- How can governmental institutions more effectively interact with each other and the private sector to ensure better water and energy nexus outcomes? How can the local actors be involved in addressing and demonstrating the impact of nexus approaches?
- What are the national policies (including budgetary policy and processes) that could support the necessary investment for water-energy programmes and frameworks for implementation? What innovative investment mechanisms can be used to support a water-energy nexus approach?

This background paper was developed by the Office of the President of the General Assembly drawing from inputs and contributions provided by members of the UN system Task Team on the Post-2015 Development Agenda and by inputs and comments received from stakeholders in the website <http://www.un.org/en/ga/president/68/settingthestage/>

During the debate follow the hashtag #UNPGA68WSSE

**Thematic Debate of the General Assembly
“Water, Sanitation and Sustainable Energy
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18-19 February 2014

Trusteeship Council Chamber

Programme

DAY 1

Opening ceremony: 10-10:30am

H.E. Mr. John W. Ashe, President of the General Assembly
H.E. Mr. Ban Ki-moon, Secretary-General of the United Nations
Mr. Girish Menon, Deputy Director Water Aid, Civil Society Representative

Panel 1: The water and sanitation challenge

10:30am-1pm

Chair: Mr. Federico Ramos de Armas. Vice-Minister for Environment, Ministry of Agriculture, Food and Environment; Spain

Moderator: Dr Ania Grobicki – Executive Secretary, Global Water Partnership

Panelists:

- **Identifying obstacles to achieving universal access to safe drinking water and sanitation, as well as other critical challenges to the sustainability of water resources.**

Dr. Christopher Williams, Executive Director, Water Supply & Sanitation Collaborative Council

- **Rights based approaches to water governance in the post 2015 development framework**

Mr. Ashfaq Khalfan - Economic, Social and Cultural Rights Policy Coordinator– Amnesty International

- **Reflecting water and sanitation in the post-2015 framework: Possible Goals and Targets**

Mr. Manuel Thurnhofer, Senior Water Advisor, Swiss Agency for Development Cooperation

- **Means of Implementation and partnerships for development**

Dr. Analia Mendez – Unilever

Feature Presentation: Ms Catarina de Albuquerque, Special Rapporteur: The Human Right to Safe Drinking Water and Sanitation

Panel 2: The sustainable energy challenge

3-6pm

Chair: H.E. Bartelemy Kassa, Minister for Energy, Oil and Mineral Exploration, Water and Development of Renewable Energies, Benin

Moderator: Professor Vijay Modi, Professor School of Engineering and Applied Science Faculty, Earth Institute, Columbia University

- **National Integrated Sustainable Energy Systems, Energy Efficiency, Fuel Diversification and Renewable Energy**

Professor Albert Binger, Energy Science Advisor, Caribbean Community Climate Change Centre

- **National Policies and International Cooperation supporting Means of Implementation (Investment, Technology Transfer, Capacity Development and Regional Integration)**

Dr Mike Allen –Special Envoy for Renewable Energy, New Zealand

- **Reflecting Energy in the post-2015 framework: Possible Goals and Targets**

H.E. Mr. Geir O. Pederson, Permanent Representative of Norway to the United Nations

DAY 2

Panel 3 The Water Energy nexus

10am-1pm

Chair: H.E. Mr. Masood Khan, Permanent Representative of Pakistan to the United Nations

Moderator: Ms. Elizabeth Thompson, Executive Coordinator Rio+20 and Former Minister of Energy and Environment of Barbados

- **International Year of Water Cooperation, 2013, and the water-energy nexus from a national perspective.**

Mr. Pulod Muhiddinov - Deputy Minister of Energy and Water Resources , Tajikistan

- **Institutional Challenges for the Water-Energy Nexus: The Arab Perspective**

Mr. Najib Saab: Secretary General, Arab Forum for Environment & Development (AFED)

- **Reflecting the water/energy nexus in the post-2015 framework: Options and Considerations**

Mr. Felix Dodds, Co-Director, Nexus 2014: Water, Food, Climate and Energy Conference

Feature Presentation: **Mr Wu Hungbo, United Nations, Under-Secretary-General for Economic and Social Affairs**

Closing segment:

Summaries by the co chairs of the panels

H.E. Mr. Jan Eliasson, Deputy Secretary-General of the United Nations

H.E. Mr. John W. Ashe, President of the General Assembly



THE PRESIDENT
OF THE
GENERAL ASSEMBLY

5 March 2014

Excellency,

I have the honor to transmit herewith a Summary of the key messages that emerged from the **General Assembly's Thematic Debate on Water, Sanitation and Sustainable Energy in the Post 2015 Development Agenda** which I convened on the 18th and 19th of February 2014.

Please accept, Excellency, the assurances of my highest consideration.

A handwritten signature in cursive script that reads "John W. Ashe".

John W. Ashe

To All Permanent Representatives
and Permanent Observers
to the United Nations

Summary
Key messages that emerged from the General Assembly
Thematic Debate on Water, Sanitation and Sustainable Energy in the Post 2015
Development Agenda
18-19 February 2014

Lessons Learned

1. Eradicating extreme poverty is the overarching goal of the post-2015 development agenda, and there was overall consensus about the importance of water, sanitation and sustainable energy as major enablers of poverty eradication and sustainable development, and as indispensable factors for sustained economic growth, raising living standards and for achieving other major development goals.
2. While notable advances have been made in moving toward universal access to water, sanitation and sustainable energy, significant progress still needs to be made. In this regard it was noted that (i) sanitation is the most off-track of all the MDG targets and this gap would need to be addressed in any new development framework (ii) major transformations of energy systems are necessary to provide affordable energy to people still lacking access, to satisfy accelerated energy demand growth, particularly in developing countries, and to reduce the negative impacts of climate change.
3. There was an acknowledgement that a number of challenges in both the water and energy sectors must be addressed if the goal of universal and sustained access is to be realized. For water, these include issues of water stress and water scarcity, improving integrated water resources management (IWRM) and effective wastewater management. For energy, these include the creation of effective enabling environments for investment, including attractive investment climates, stable and coherent policies and adequate regulatory and institutional frameworks. Any future development agenda must address all of these challenges in a holistic manner.
4. Many best practices exist globally in both the water and sanitation and energy sectors that would need to be scaled up. Notwithstanding, fragmentation in the governance of the water and sanitation sectors would have to be overcome in order to ensure sustained solutions.
5. In any rights based approach to governance in the water and sanitation sectors vulnerable groups and populations must be prioritized. Such an approach would enable these groups to have access to adequate, safe, and affordable water for personal and domestic uses and to have physical and affordable access to sanitation that is safe, hygienic, secure and adequate. Cross-cutting human rights principles include non-discrimination, gender equality, and priority to disadvantaged groups, participation, and accountability. Communities should have access to justice, and a right to information.

6. It is important to note the inter-linkages that exist between water, sanitation, and sustainable energy with many other issue areas, including agriculture, food security, health, education, infrastructure, climate change, peace and security, and gender equality.
7. Technology transfer, and with it capacity building, must be prioritized in any future development agenda. Clean, affordable, adaptable technologies must be made available to developing countries and in particular Small Island Developing States (SIDS) to support the transition to low carbon and green economies and for mitigating climate change. This could be facilitated through an international platform that can serve as an effective and meaningful technology transfer mechanism.
8. The issue of fossil fuel subsidies remains a challenge which needs to be carefully studied and addressed in any future development agenda for energy; it was also underscored that fossil fuel subsidies lead to inefficiencies and environmental degradation.
9. Overall there was a strong call for integrating a gender perspective in access to water and energy.

Contributions to the Open Working Group on Sustainable Development Goals and the Intergovernmental Committee of Experts on Sustainable Development Financing

1. There is broad support for a dedicated goal on water, with possible targets on safe drinking water and sanitation; water resources management; reuse and treatment of wastewater and wastewater pollution and water quality. Protecting communities from water-related disasters, including floods and droughts, and protecting and restoring water-linked ecosystems were also frequently mentioned.
2. There is broad support for a dedicated stand-alone goal on energy. Possible targets could include ensuring universal access to modern energy services, doubling the global rate of improvement in energy efficiency; and doubling the share of renewable energy in the global energy mix.
3. Goals on water and on energy could be complemented by having cross-cutting nexus targets with other sustainable development goals in order to further advance an integrated approach aimed at eradicating poverty and promoting sustainable consumption and production patterns. Caution was expressed regarding partially embedded nexus approaches, particularly limited to energy and water, divorced from broader, cross-sectoral linkages.
4. For LDCs universal energy access is a significant undertaking and as such, appropriate attention would need to be paid to the following: increase per capita energy supply to the same level of other developing countries; increase energy

efficiency and renewable energy access to leapfrog to the path of green economy and sustainable development; a new generation of global partnerships; and enhanced financial assistance and access to technologies.

5. The importance of means of implementation, including financing, knowledge sharing and technology transfer, capacity-building, as well as the creation of a national enabling environment including sound water, sanitation and sustainable energy policies and institutional frameworks, was also underscored.
6. ODA remains an essential source of financing, especially for LDCs and other groups of developing countries with specific development challenges. Notwithstanding particular attention needs to be given to diversifying sources of funding at the national level, including through leveraging private sector finance. The importance of the private sector and public-private partnerships was also underscored. The importance of means of implementation, including financing, knowledge sharing and technology transfer, capacity-building, as well as the creation of a national enabling environment including sound water policies and institutional frameworks, was also underscored.
7. Public funding for sustainable energy must be complemented by funding from the private sector. The private sector has an important role to play and public-private partnerships can effectively advance the goals and objectives on energy, water and sanitation. Increased incentives for business innovation are needed to use resources more efficiently and advance integrated approaches.
8. There is a need to increase support for nexus research and capacity building for integrated resource management. To implement an integrated approach, increased financing and technology transfer are indispensable requirements.
9. Partnerships between all stakeholders at all levels are also key in this regard. South-South and regional cooperation, including addressing trans-boundary water cooperation issues, in accordance with international law, can also play an important role in sharing expertise and knowledge on how to address the nexus.

The post-2015 development agenda: Issues for further consideration

1. Successful implementation of sustainable development goals and targets, particularly in the water, sanitation and energy sectors, will require strong and accountable institutions at all levels; as well as reliable monitoring frameworks adaptable to differing national circumstances and stages of development. Such frameworks would benefit from a data revolution, with specific emphasis on supporting capacities for statistical collection within developing countries.
2. As Member States advance in their deliberations on the post 2015 development agenda, further attention will be required to consider effective review and

implementation mechanisms, drawing from the lessons learned with regard to the implementation, follow-up and review of the Millennium Development Goals.

3. The implementation of the post 2015 development agenda will require the participation and involvement of all stakeholders. National parliamentarians and local and territorial governments will play a key role in this regard because of their responsibility in the development of national legal and regulatory frameworks and in the delivery of services to their citizens. This agenda will also require an increased participation by, and increased responsibilities on the part of the private sector as a partner for the achievement of sustainable development, and the promotion of sustainable consumption and production patterns. The agenda will have to engage major groups and other stakeholders; it cannot ignore the question of existing gender inequality; and it will have to be particularly responsive to the needs of different groups and sectors of our societies, including those of people living with disabilities and of marginalized groups, particularly those living in extreme poverty.

Thematic Debate of the General Assembly: Water, Sanitation and Sustainable Energy in the post 2015 development agenda

AMNESTY
INTERNATIONAL



Rights based approaches to water governance in
the post 2015 development framework

Ashfaq Khalfan, 18 February 2014

Content of the human rights to water and sanitation

1. Safe (clean, hygienic and secure)
 2. Affordable
 3. Physically accessible: In or next to homes, schools, health centres and workplaces.
 4. Acceptable to users (e.g. separate male and female toilets in public places)
 5. Sufficient water for personal and domestic uses
 6. Sanitation provides privacy and ensures dignity
-

Cross-cutting Human Rights Principles

1. Non-discrimination, gender equality and priority to disadvantaged groups
 2. Participation in decision-making affecting a person's rights, including the right to information
 3. Accountability: Right to an effective remedy when human rights denied
-

Rights to water and sanitation addressed in MDG targets and indicators?

Content of rights	Reflected in MDG Targets and Indicators?
1. Safe	Yes on type of facility, but not verified. No on hygiene, location or safety of structure
2. Affordable	No
3. Physically accessible	Partially for homes. No for schools, health centres and workplaces
4. Acceptable	No
5. Sufficient water	No
6. Sanitation: Privacy and dignity	Partially, as shared toilets excluded

Cross-cutting Human Rights Principles

1. Non-discrimination, gender equality and priority to disadvantaged groups
 2. Participation in decision-making affecting a person's rights, including the right to information
 3. Accountability: Right to an effective remedy when human rights denied
-





Proposed Target: Access to Justice

Ensure that all persons have access to a mechanism which is affordable and able to provide justice for their civil, cultural, economic, political and social rights related to the post 2015 development goals

Indicators:

- Proportion of males and females whose human rights related to the post 2015 goals are capable of protection by a national mechanism
 - Proportion of males and females who have access to a relevant national mechanism and which is affordable
 - Proportion of males and females who have a recognized form of identity
-

Target: Processes to ensure consistency of post 2015 goals with human rights

Laws and policies related to the post 2015 development agenda are based on human rights standards

Indicators:

- Proportion of national laws and policies relevant to post 2015 goals that have been reviewed nationally for consistency with international standards through a transparent process involving public participation, including a transformative gender assessment
 - As above, for policies of intergovernmental organisations
-

Target: Right to information

Ensure guaranteed access to information for all relevant to the post 2015 development goals

Indicators:

- Proportion of people with a legal entitlement to information held by public bodies provided within 30 days without arbitrary barriers
 - Proportion of people who apply to access information, and whose requests are accepted, disaggregated by gender and the other most relevant grounds of discrimination, including ethnicity and disability
-



Targeting a Water-Secure World for All

Post-2015 Sustainable Development Agenda

2015
SHAPING OUR FUTURE

Manuel Thurnhofer
Senior Water Policy Advisor
Swiss Agency for Development and Cooperation SDC
New York, 18 February 2014



Targeting a Water-Secure World for All

- **Water is at the core of the three dimensions of sustainable development – social, economic and environmental**
- **Safe drinking water and adequate sanitation is a human right and together with practicing good hygiene a prerequisite for healthy human living and productivity;**
- **Water challenges for a sustainable world go beyond access to safe drinking water, adequate sanitation and hygiene;**
- **Water resources management at the basin level is key for ensuring food and energy security, economic growth and sustaining ecosystems;**



Targeting a Water-Secure World for All

- **Water resources management is a key instrument for climate change mitigation and adaptation;**
- **Management of water resources and the polluting impact of wastewater is a universal challenge for all countries;**
- **International stability and peace increasingly depend on effective management of the limited freshwater resources and their benefits;**
- **Water cannot be looked at merely as a transversal topic; water needs to have its own integrated approach which calls for a dedicated Post-2015 SDG on Water;**



Water Supply, Sanitation and Hygiene (WASH)





Water Supply, Sanitation and Hygiene (WASH)

Target	Fields of measurement
Achieve universal access to safe drinking water, sanitation and hygiene	<ul style="list-style-type: none">• No one practices open defecation• Universal access to basic drinking water, sanitation and hygiene for households, schools and health facilities• Halve the proportion of population without access at home to safely managed drinking water and sanitation services• Inequalities in access are progressively eliminated



Water Resources Management



July 1989

October 2008



Water Resources Management

Target	Fields of measurement
<p>Improve the sustainable use and development of water resources in all countries;</p> <p>Increase water productivity for growth while respecting ecosystems requirements</p>	<ul style="list-style-type: none">• Freshwater withdrawals are brought in line with available water resources• Water resources are managed at the basin level• Water resources and the derived benefits are allocated in a transparent and participatory way• Water efficiency is increased in support of sustainable and equitable growth• Ecosystems (water) requirements are respected and their services ensured• Effective cooperation arrangements are in place in all trans-boundary basins



Wastewater Management and Water Quality





Wastewater Management and Water Quality

Target	Fields of measurement
<p>Manage all wastewater to protect water resources and aquatic ecosystems</p>	<ul style="list-style-type: none">• Wastewater production is prevented/reduced• Wastewater and sludges are adequately collected, treated and safely reused/recycled• Wastewater which cannot be reused/recycled is discharged after adequate treatment



Resilience to water-related Disasters





Resilience to water-related Disasters

Target	Fields of measurement
Increase resilience to water related disasters	<ul style="list-style-type: none">• Mortality and economic losses from water related disasters are reduced• Integrated disaster risk management, including structural and non-structural approaches, is applied• Building resilience of poor and marginalized people to the impacts of water-related disasters is prioritized• Risk analysis are elaborated and early warning systems for communities at most risk to water-related disasters are in place



Nexus Water-Health





Nexus Water-Health

Nexus	Target
Link between water and health	<ul style="list-style-type: none">• Cases of water and sanitation related diseases are decreased



Nexus Water-Energy





Nexus Water-Energy

Nexus	Targets
Link between water and energy	<ul style="list-style-type: none">• Productive use of water for hydropower generation is increased while respecting requirements of ecosystems• Energy in wastewater and sludge are recovered



Nexus Water-Food





Nexus Water-Food

Nexus	Targets
Link between water and food security	<ul style="list-style-type: none">• Water productivity and water efficiency in agriculture are increased• Nutrients in wastewater and sludge are safely recovered and reused



THANK YOU



Thematic Debate of the General Assembly
“Water, Sanitation and Sustainable Energy
In the post 2015 agenda.”



MEANS OF IMPLEMENTATION AND PARTNERSHIPS FOR DEVELOPMENT

DR ANALIA MENDEZ
FEBRUARY 2014



UNILEVER: A GLOBAL COMPANY



- Operations in 100 countries
- Sales in over 190 countries
- 171,000 employees



UNIVERSAL ACCESS TO WASH



Health

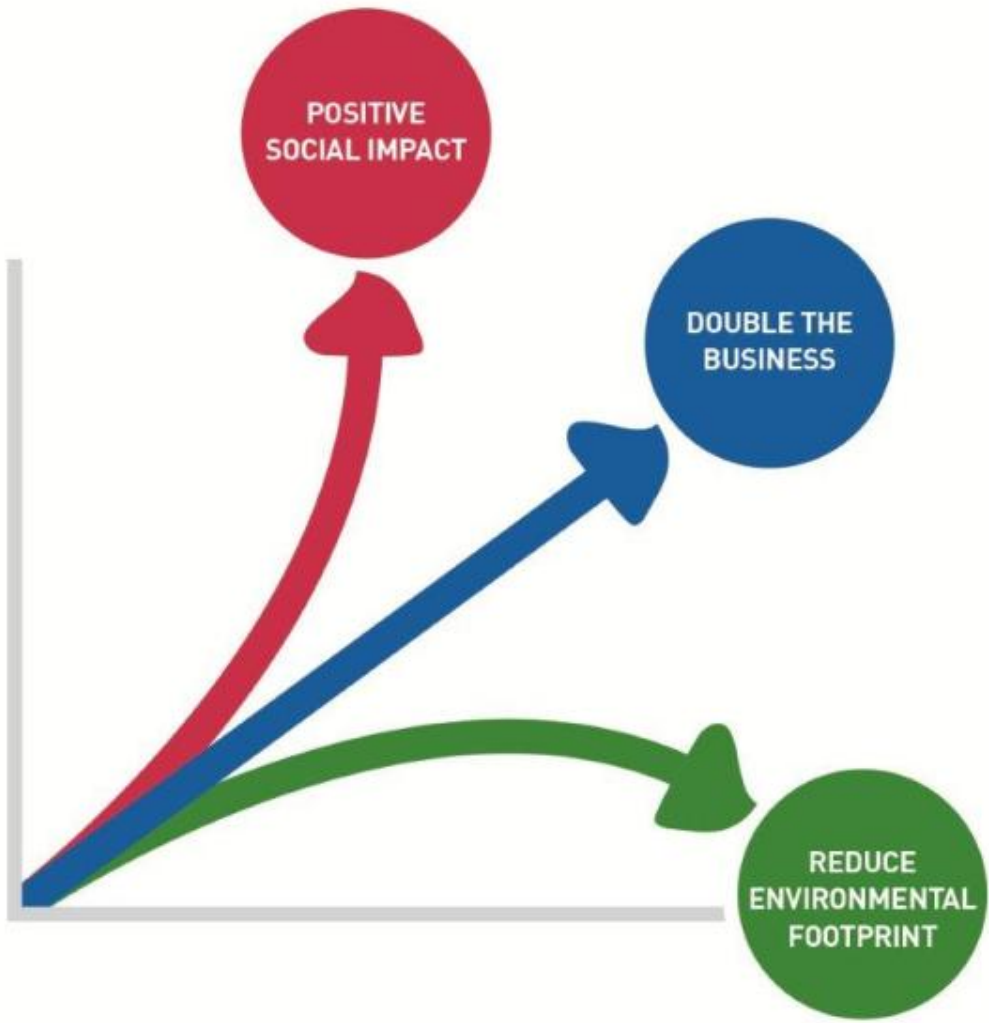
Education

**Gender equality
and safety**

Livelihoods

Nutrition

OUR VISION



UNILEVER SUSTAINABLE LIVING PLAN UNDERPINNED BY 3 GOALS



HELP
1 BILLION
PEOPLE IMPROVE
THEIR HEALTH
& WELL-BEING

HALVE
ENVIRONMENTAL
FOOTPRINT OF
OUR PRODUCTS

SOURCE
100%
OF AGRICULTURAL
RAW MATERIALS
SUSTAINABLY

5 LEVERS FOR CHANGE



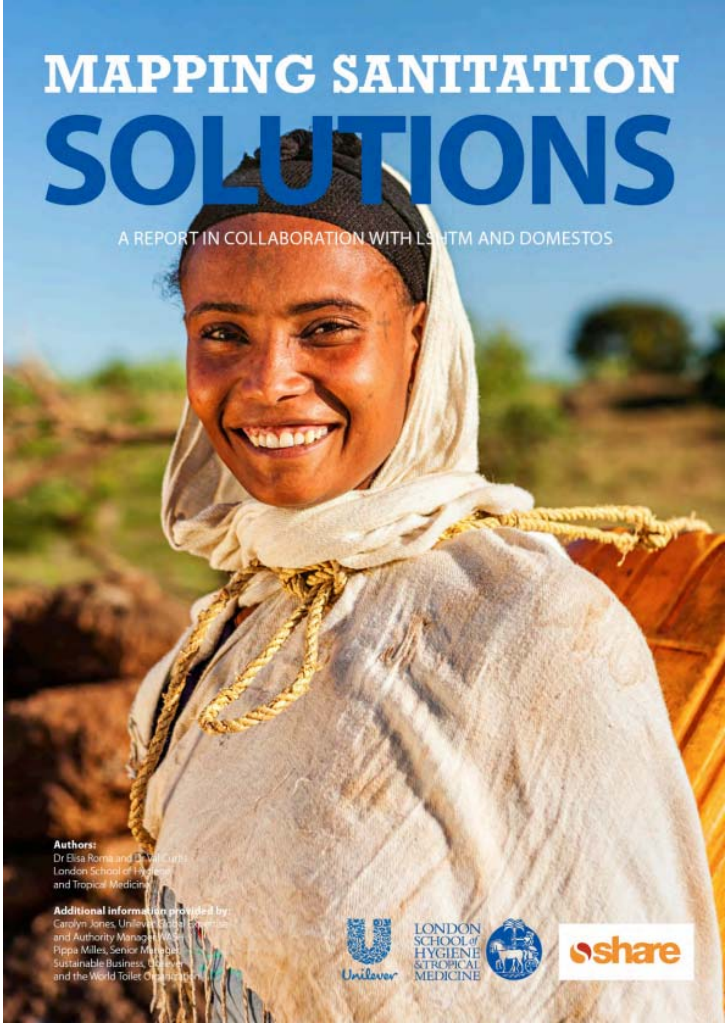
Unilever



OUR WASH PROGRAMMES



MAPPING SANITATION SOLUTIONS



Authors:
Dr Elisa Roma and David Curtis,
London School of Hygiene
and Tropical Medicine

Additional information provided by:
Carolyn Jones, Unilever Sustainable
and Authority Manager, Water
Pippa Miles, Senior Manager,
Sustainable Business, Unilever
and the World Toilet Organization



Eliminate Inequalities in Water and Sanitation in the Post-2015 Agenda

Catarina de Albuquerque
***Special Rapporteur on the human right to safe
drinking water and sanitation***

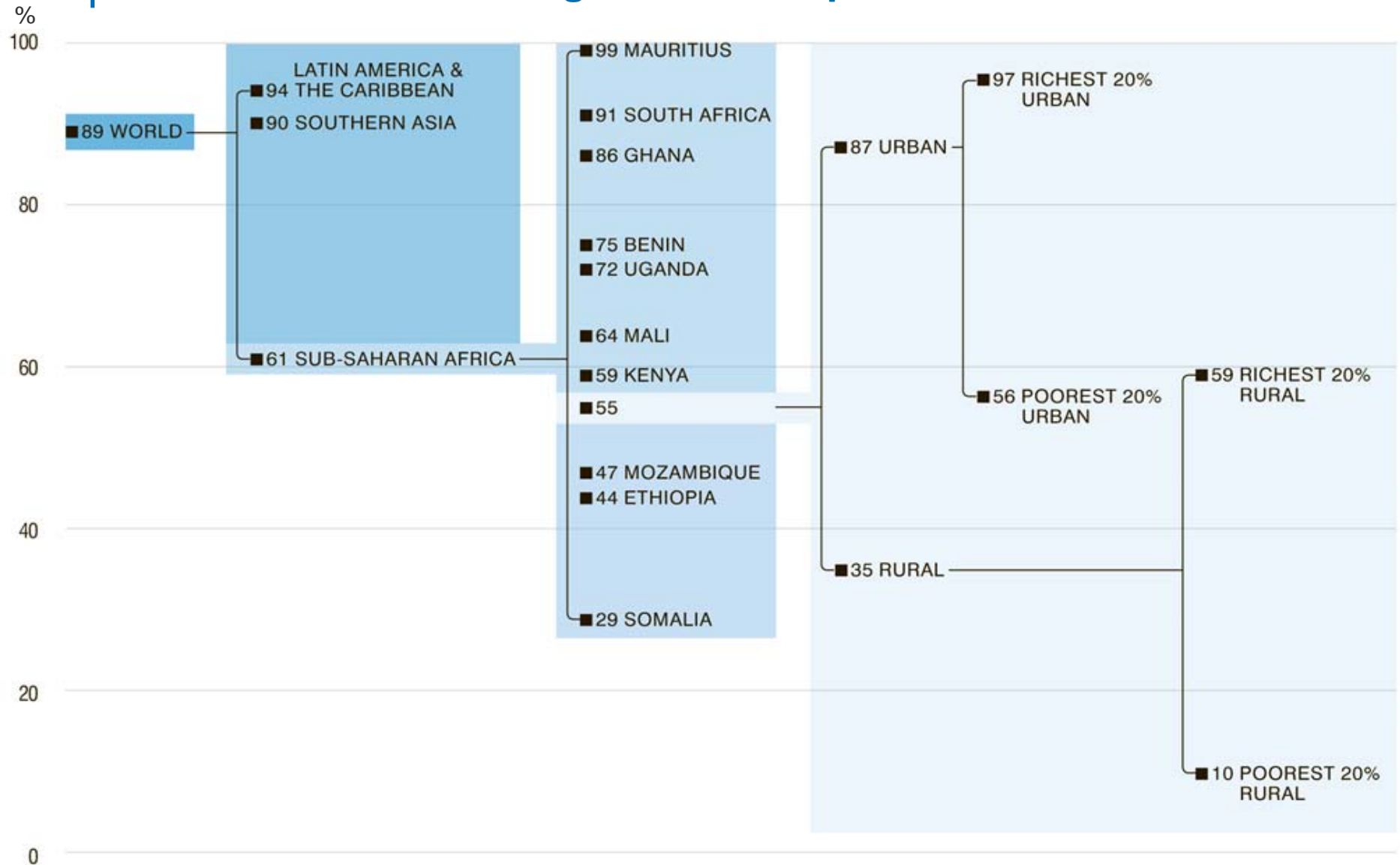


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Averages mask inequalities



Drinking water coverage in selected countries in sub-Saharan Africa and urban/rural coverage among poorest and richest households in [Country] per cent)

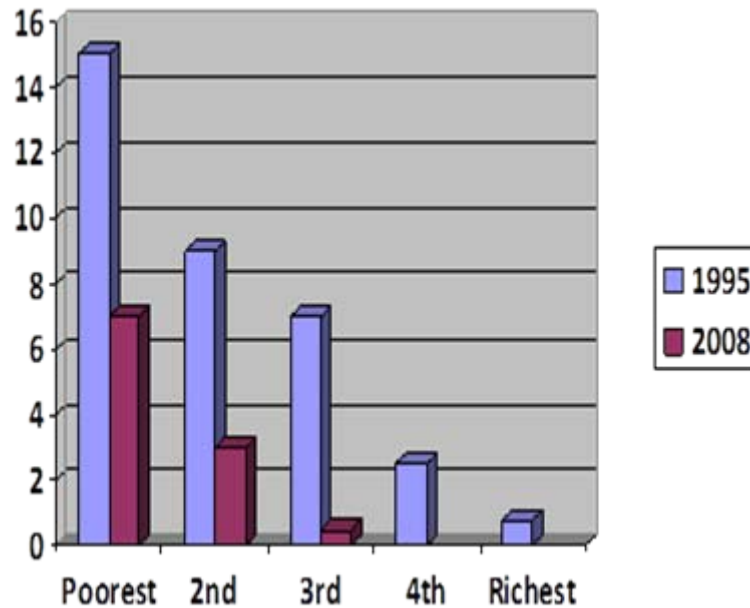
Source: JMP 2012, and [Country] DHS, 2008

WHO/UNICEF JMP, 2012

Open defecation trends vary by household wealth

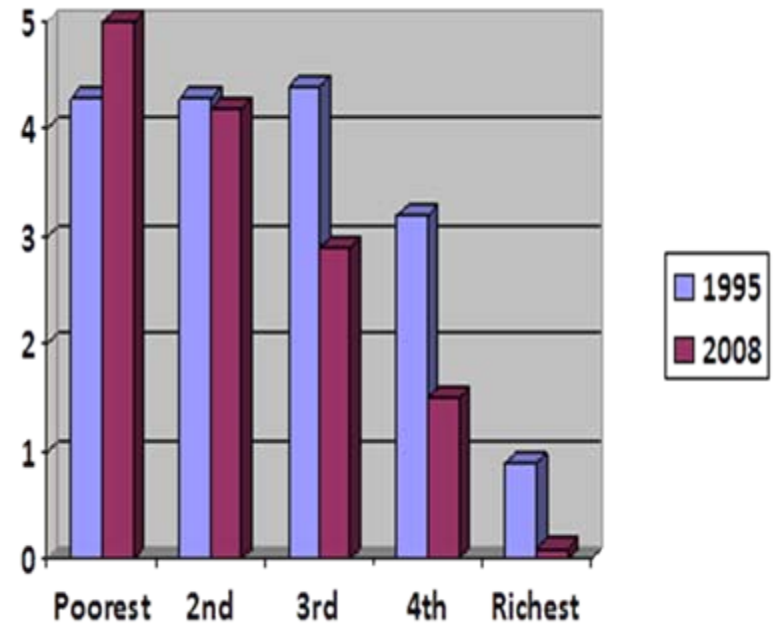
Bangladesh

(Millions)



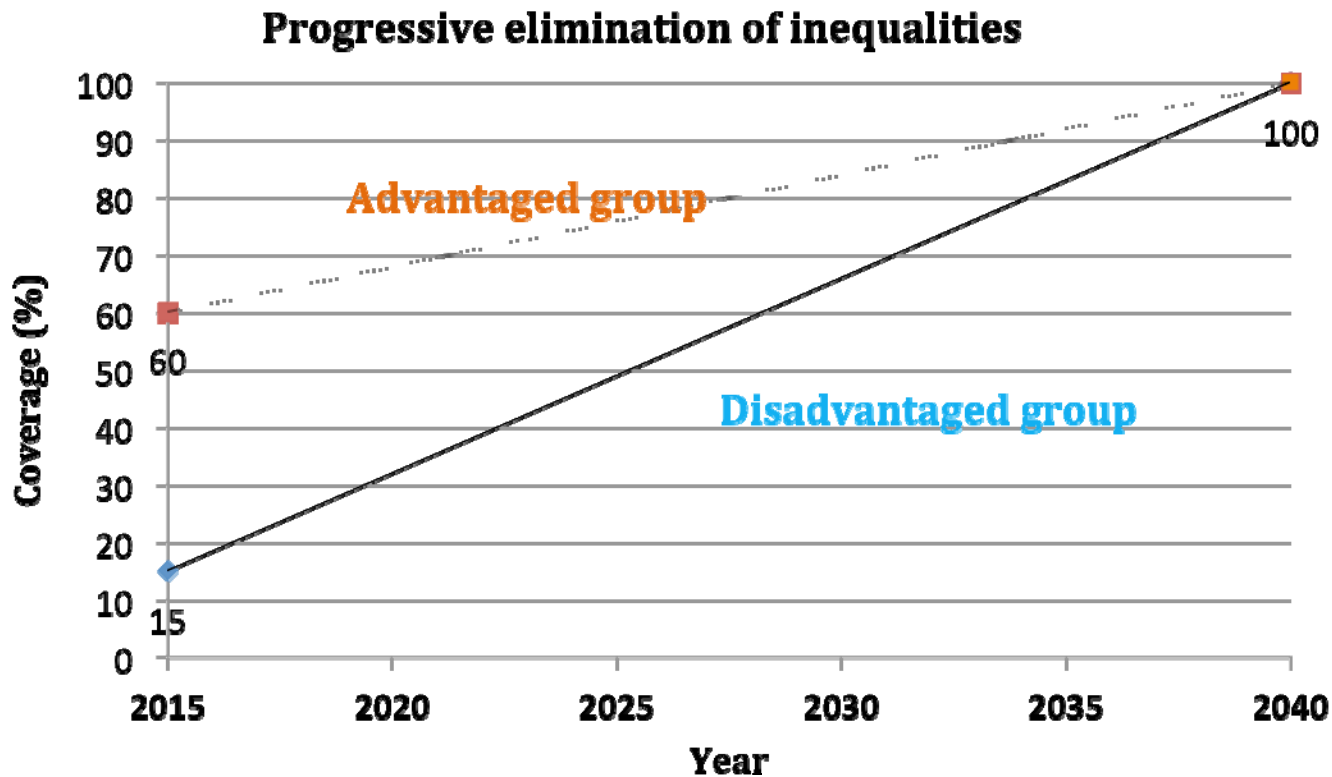
Typical country with a high rate of open defecation

(Millions)



What is the elimination of inequalities?

The systematic reduction and elimination of the inequalities between different population groups as they progress toward the specified target.



Thank you



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OVERVIEW

CARICOM:

The Caribbean Community (CARICOM) consists of developing small island States and low lying coastal States, all of which exhibit unique and peculiar characteristics, including, *inter alia*, varying topographies, limited natural resources, small populations and fragmented markets with different energy product specifications.

Climate Change:

Climate Change has now advanced globally as a priority matter for decision makers. Caribbean countries are recognized as being among the most vulnerable to global climate change and the consequences of global warming are projected to adversely affect the countries in the Caribbean. These effects include:

- Higher average air and sea temperatures;
- Rising sea levels; and
- Other changing weather patterns, such as *stronger and more frequent* hurricanes, and *more frequent* flooding and drought periods.

OVERVIEW

Fossil Fuel:

All CARICOM Member States depend *heavily* on fossil fuels to supply their energy demand.

The fifteen CARICOM Member States could be classified into the following broad groupings based on their import and export capabilities of petroleum derived products:

1. HYDROCARBON PRODUCERS

(i) Net energy exporters of petroleum, petroleum related products and natural gas. Trinidad and Tobago is the only major producer and net energy exporter within the region.

(ii) Other energy producers, such as Suriname, Barbados and Belize, which are producers of crude oil that supply some of their domestic needs but are overall net importers.

2. NON-HYDROCARBON PRODUCERS

All other CARICOM Member States are non-producers of hydrocarbons; they are net importers.

Consumption of Petroleum Products

Primary Energy Consumption:

Primary consumption of petroleum products within CARICOM in 2007 totalled 220.46 million boe, with Trinidad and Tobago accounting for 148.96 million boe.

•Meanwhile total primary energy consumption per capita in CARICOM for 2007 was 319.38 boe, with Trinidad and Tobago accounting for 120.83 boe of the total.

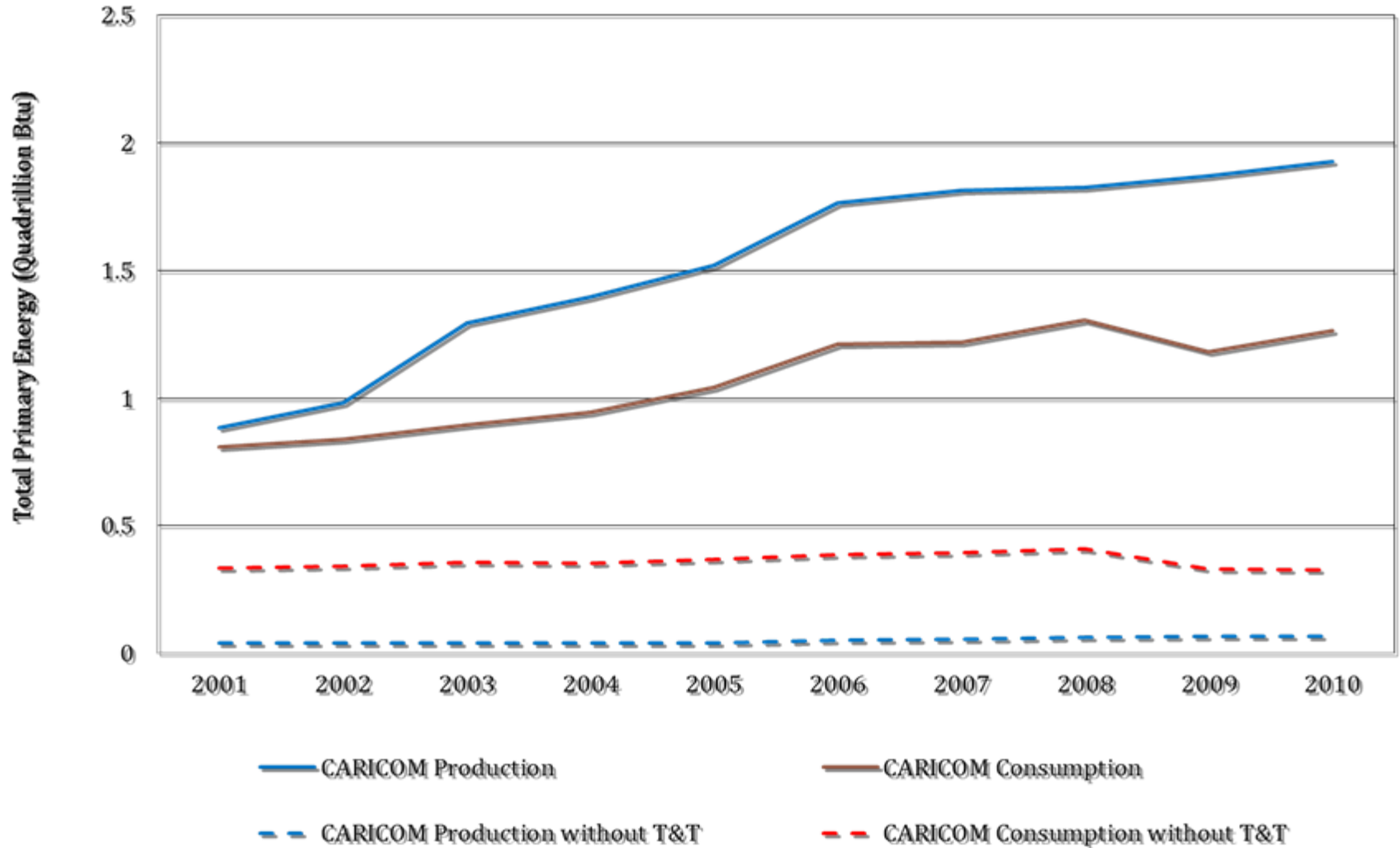
Petroleum Products:

Consumption of petroleum products within CARICOM, totalled 224,000 boe per day with Jamaica leading at 77,000 boe per day, followed by Trinidad and Tobago with 43,000 boe and the Bahamas with 36,000 boe per day respectively.

•Distillates and residual fuel oils accounted for 57% of all the petroleum products consumed in 14 of the 15 CARICOM Member States in 2008.

CARICOM Energy Production and Consumption Trends

Source: CARICOM Sustainable Energy Roadmap and Strategy (2013)

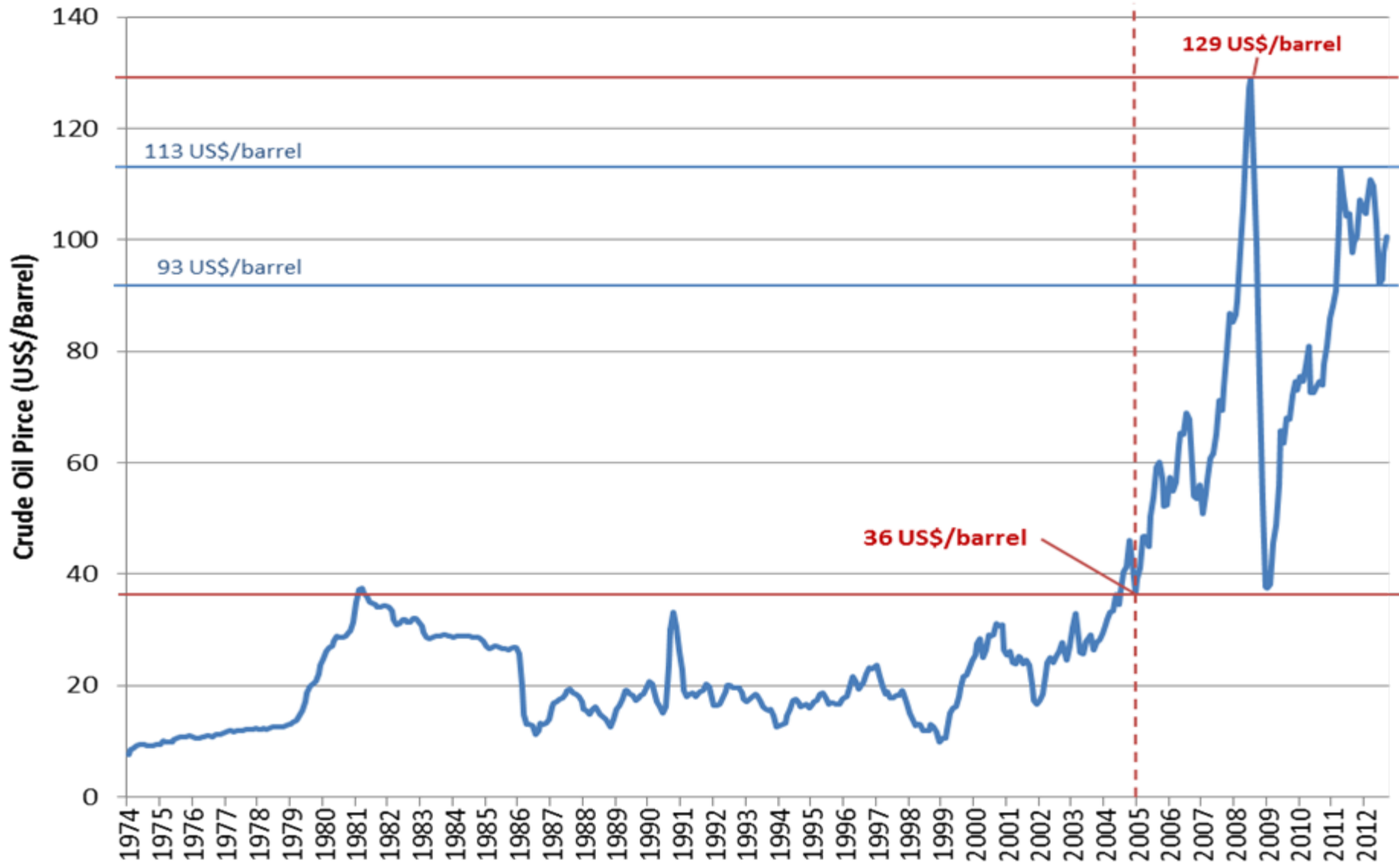


CARICOM (excluding Haiti and Montserrat) Annual Liquid Fuel Consumption (2011)
Source: SIDS DOCK. Capacity Building Strategy (2013)

Country	Liquid Fuel Consumption (ooo's barrels)			
	Total	Power Generation	Transportation	
			Gasoline	Diesel Oil
Antigua and Barbuda	1,251.1	560.2	304.5	386.4
The Bahamas	9,408.2	4,750.2	1,692.0	2,966.0
Barbados	2,726.3	1,241.6	811.7	673.0
Belize	1,148.9	142.9	354.7	651.3
Dominica	328.8	74.9	106.4	147.5
Grenada	647.8	202.5	163.4	281.9
Guyana	3,403.0	744.0	747.5	1,911.5
Jamaica	14,602.9	6,225.9	4,398.0	3,979.0
St. Kitts & Nevis	548.8	187.4	132.1	229.3
St. Lucia	1,390.2	456.4	351.4	582.4
St. Vincent & The Grenadines	666.5	155.6	167.3	343.6
Suriname	2,073.4	493.0	634.6	945.8
Trinidad and Tobago	5,056.6	18.7	3,101.3	1,936.6
Total CARICOM	43,252.5	15,253.3	12,964.9	15,034.3

Refiner Acquisition Cost of Crude Oil, Composite (1974-2012)

Source: U.S. Energy Information Administration, Energy Review (December 2012)



TRANSPORT

Transportation's impacts in the Caribbean are sometimes overlooked because of the sector's complexity and the general lack of available data on its status.

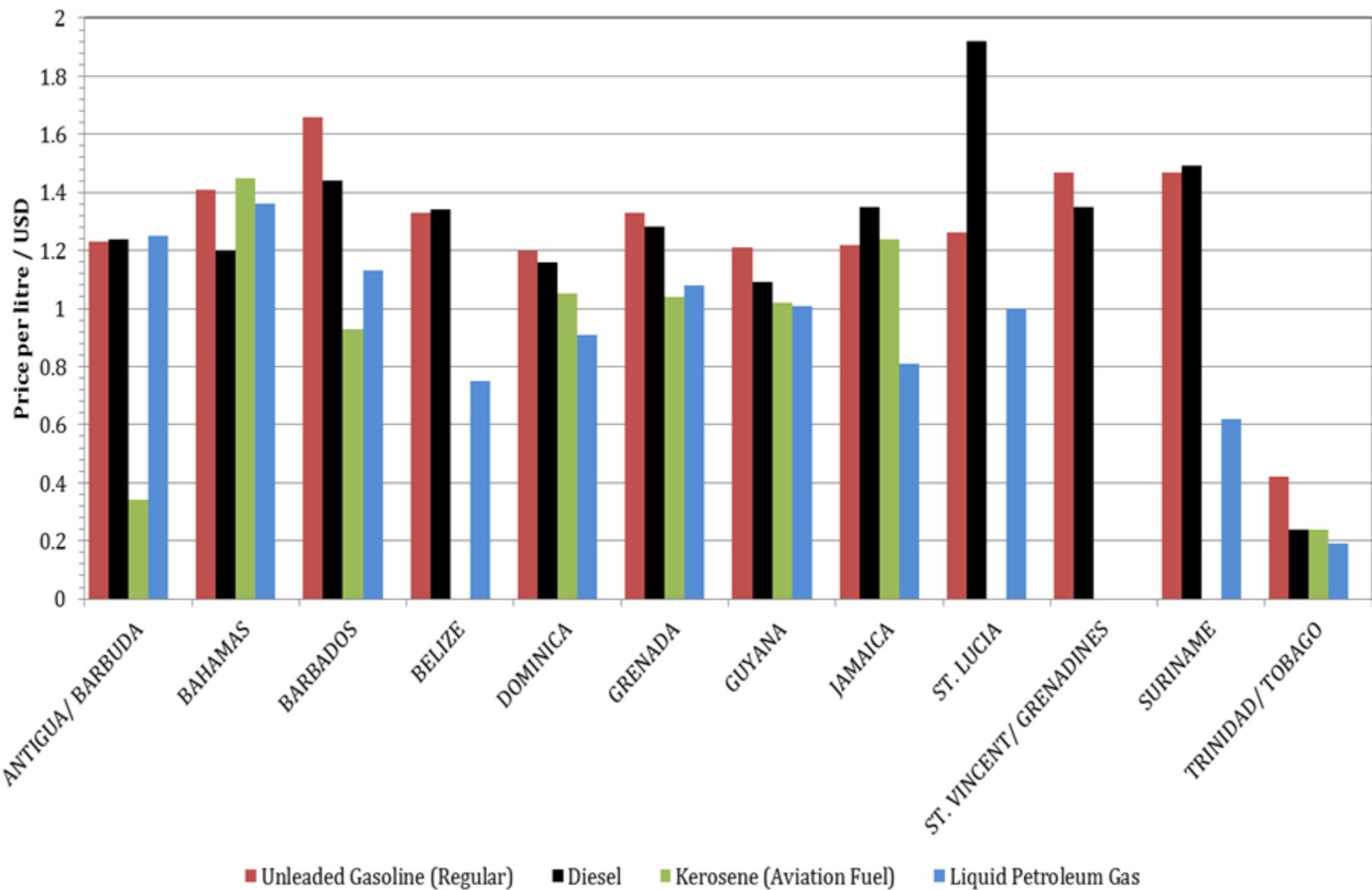
•In addition to substantial fuel requirements and significant greenhouse emissions, the sector can have negative effects on local pollution, noise, congestion, health, and safety if it is not well designed and regulated.

•These impacts influence the overall costs of goods and services in the region and have been recognized as one of the “most important barrier[s] to development for small islands”.

•Detailed information about vehicle and fuel use in the transport sector is mostly disorganized or uncollected, making analysis and planning difficult. To address the significant gaps in transportation data across the region, extensive research and stakeholder collaboration are needed to fully assess the impacts of various transport options, *especially the large volume of recreational transport associated with the tourism industry in some countries.*

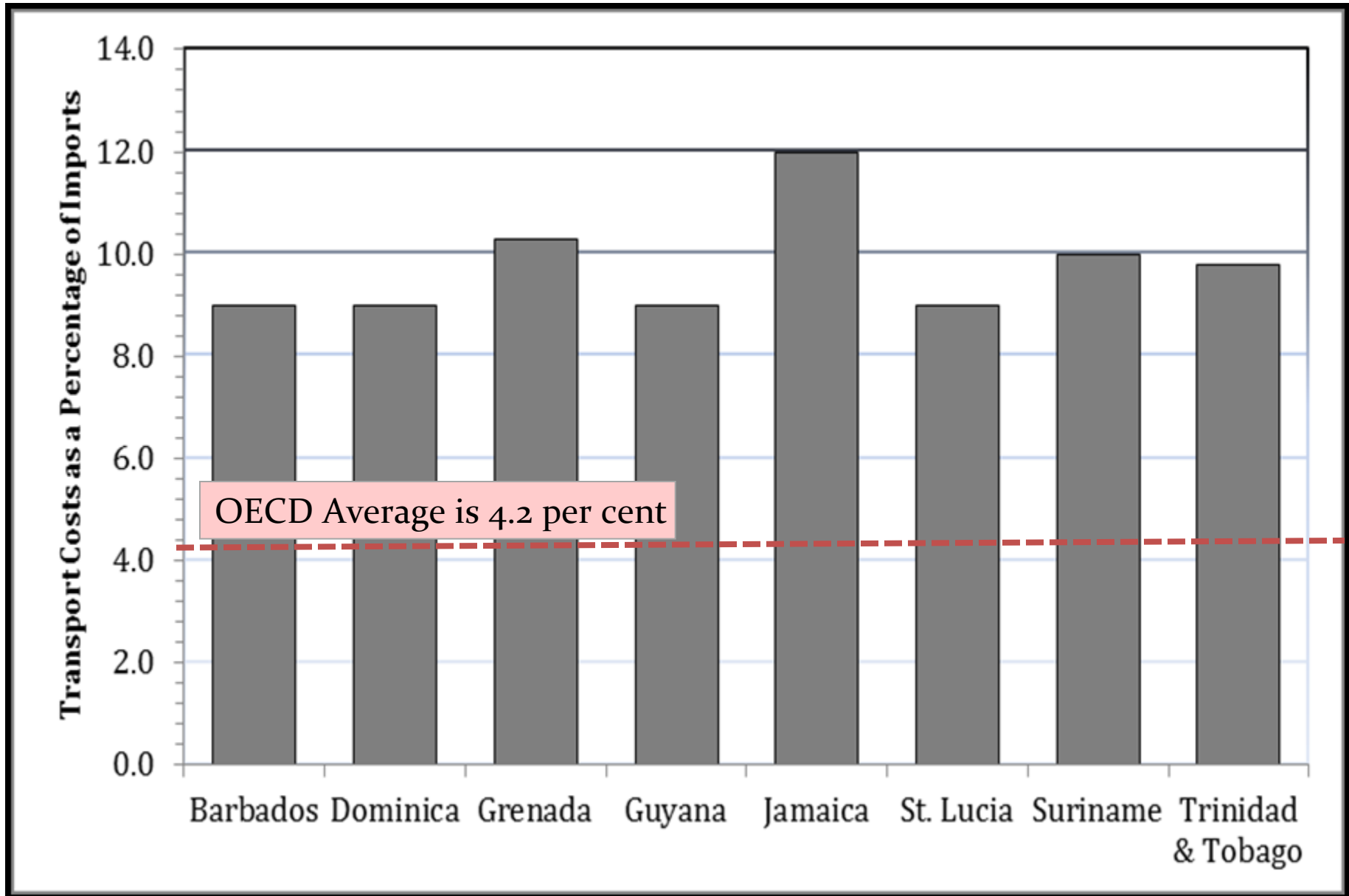
Retail Prices for Petroleum-derived Liquid Fuels (USD per litre), February 2013

Source: CEIS (2013)



Transport Costs as a Percentage of Imports for Select CARICOM States

Source: CARICOM Energy Unit (2012)



ELECTRICITY

Electricity Consumption:

Electricity consumption increased in CARICOM Member States over the period 1998 - 2007. The contribution of renewable energy in CARICOM is miniscule compared to the vast potential available; renewable energy contributed about 9% to the total primary energy consumed between 1998 to 2007.

Electricity markets in selected CARICOM Countries:

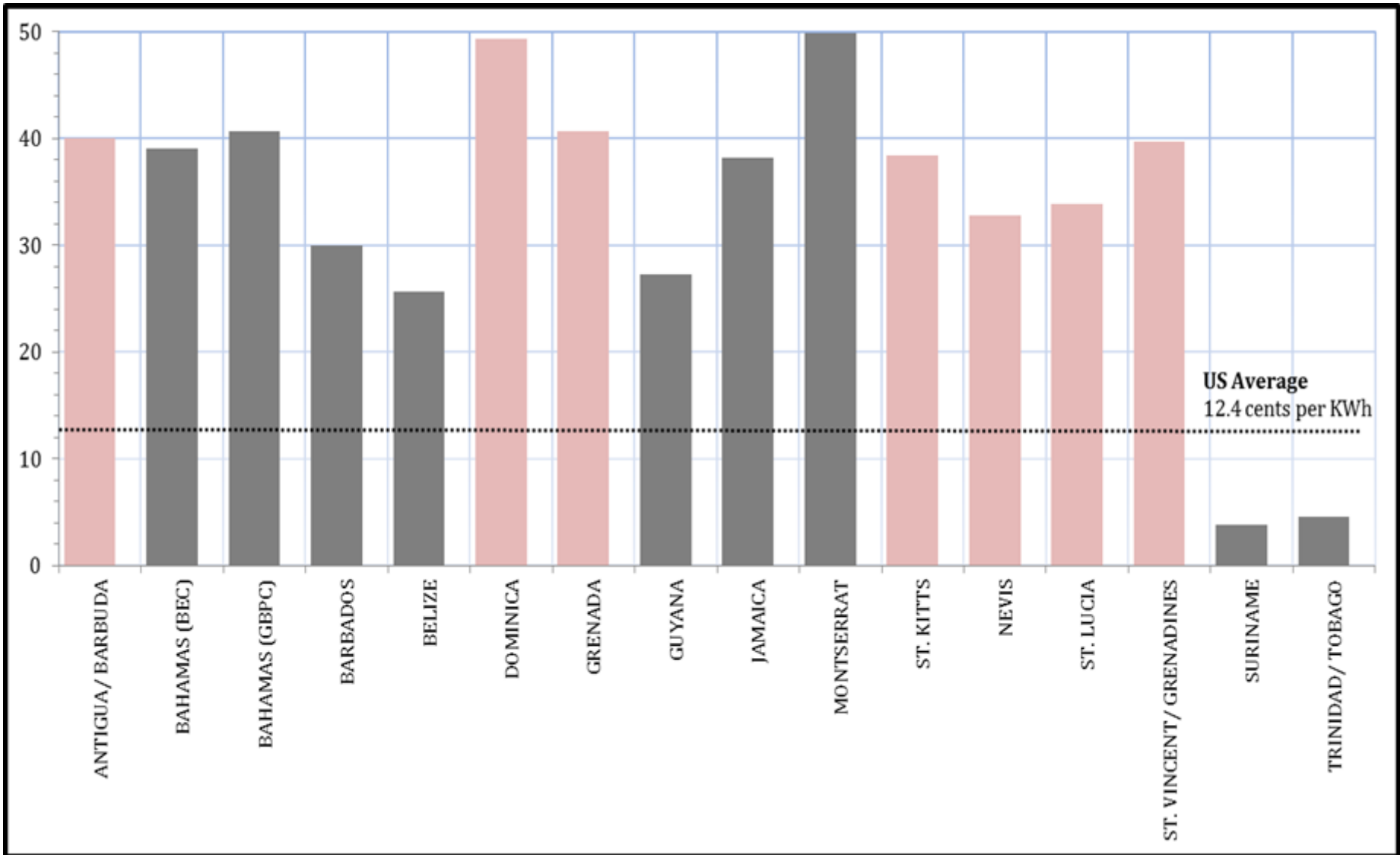
The electricity market is characterized by a mix of state-owned and private or partially private utilities. All of the utilities within CARICOM are vertically integrated except for Trinidad and Tobago where generation is unbundled from transmission and distribution.

Electricity Costs:

Caribbean electricity prices rank *among the highest in the world*, largely because of high operating costs linked to rising fuel prices, inefficient T&D networks, and the inability to benefit from economies of scale given the small market size of individual island states and small populations in the large mainland territories. Geographic remoteness, steep topography, and other characteristics typical and adds to costs. Even so, electricity tariffs vary widely throughout the CARICOM region.

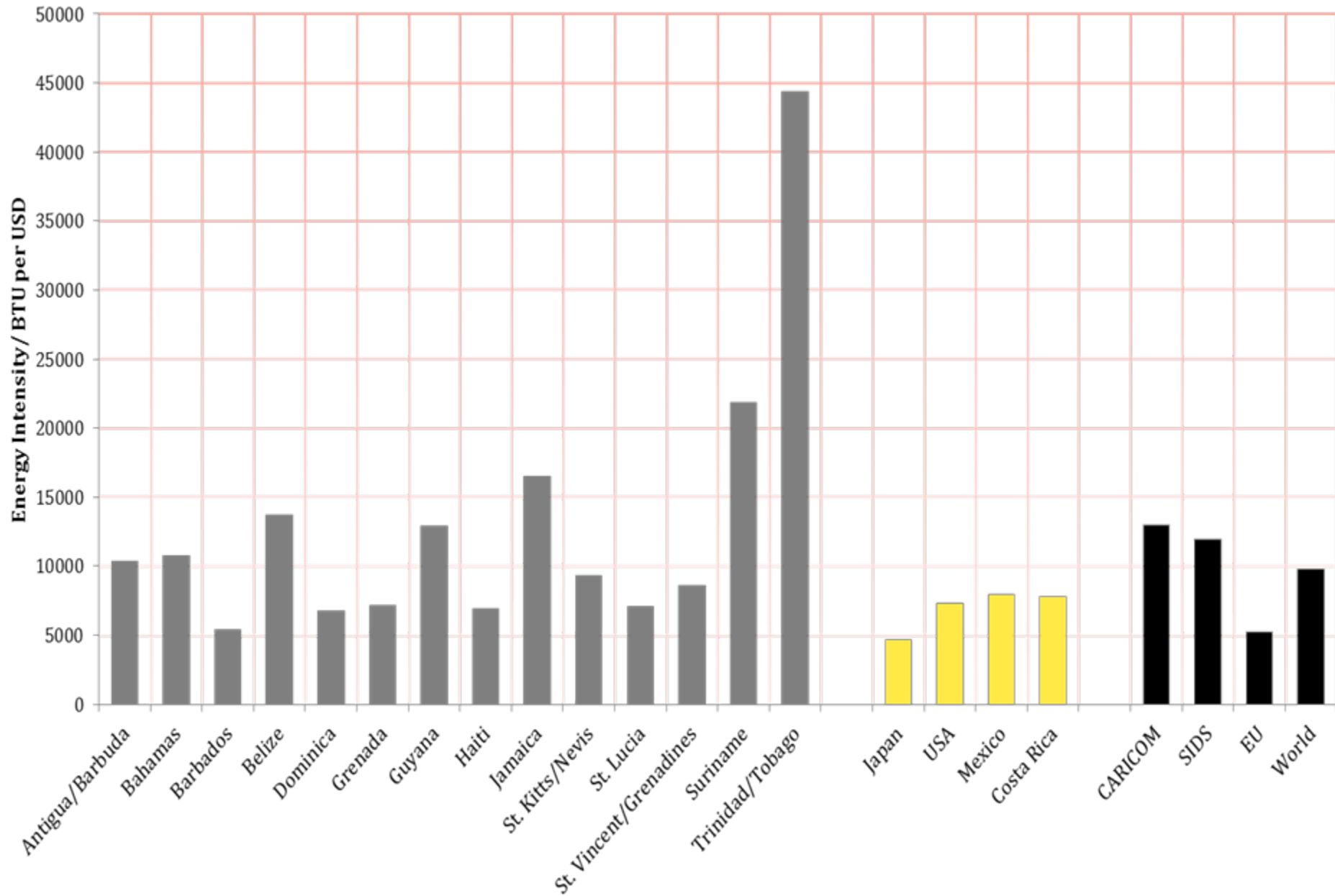
Average Retail Prices for Electricity (US cents per kWh), 2012

Source: CARILEC (2013)

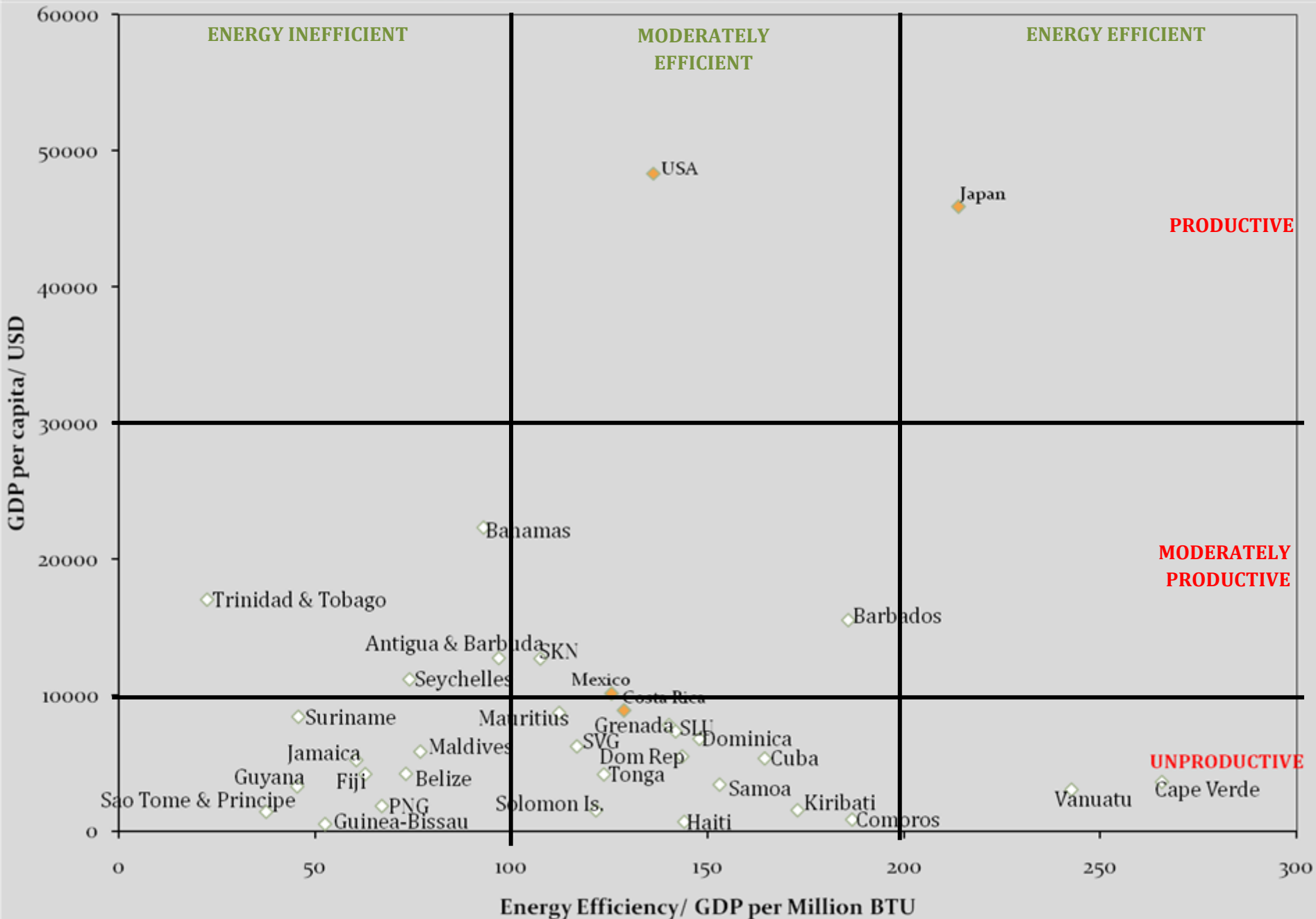


Energy Intensity, CARICOM States (2012)

Source: UN Statistics Database



SIDS Energy Productivity Chart



Predicted Climate Change Effects

- **Hotter temperatures, sea-level rise and increased hurricane intensity.**
- **Increased hurricane damages, loss of tourism revenue, and infrastructure damages.**
- **Estimated cost under BAU is US\$22 billion annually by 2050 and US \$46 billion by 2100, i.e. 10 per cent and 22 per cent of GDP respectively**

Within the Caribbean

- **Caribbean population is largely concentrated in coastal areas**
- **Much of the infrastructure may not be able to withstand significantly stronger winds, deeper incursions forceful ocean surges**
- **Accelerated erosion of coastal beaches, land and protective mangroves**
- **More frequent and longer droughts**
- **Coral reef habitats are stressed by warmer waters**

SIDS-appropriate Sustainable Energy Supply Technology, Caribbean

Technology	Solar PV	Wind	Hydro - <i>Run-of- river</i>	Geo. <i>Binary</i>	Biomass- <i>Gasification</i>	Biomass- <i>Anaerobic</i>	Biomass- <i>Liquid biofuels</i>	OTEC	Ocean – <i>Current</i>
Countries	Caribbean								
Antigua and Barbuda	X	X			X	X		X	X
Bahamas	X	X			X			X	X
Barbados	X	X			X	X		X	X
Belize	X	X	X		X	X	X *		
Dominica	X	X	X	X	X	X		X	X
Dominican Republic	X	X	X		X	X	X *	X	X
Grenada	X	X	X	X	X	X		X	X
Jamaica	X	X	X		X	X	X *	X	X
St. Kitts and Nevis	X	X		X	X	X		X	X
St. Lucia	X	X	X	X	X	X		X	X
St. Vincent and the Grenadines	X	X	X	X	X	X		X	X
Suriname	X	X	X		X	X	X*		
Trinidad and Tobago	X	X	X		X	X		X	

Estimated “Commercially Developable” Renewable Energy Potential in CARICOM

Source: CARICOM Sustainable Energy Roadmap and Strategy (2013)

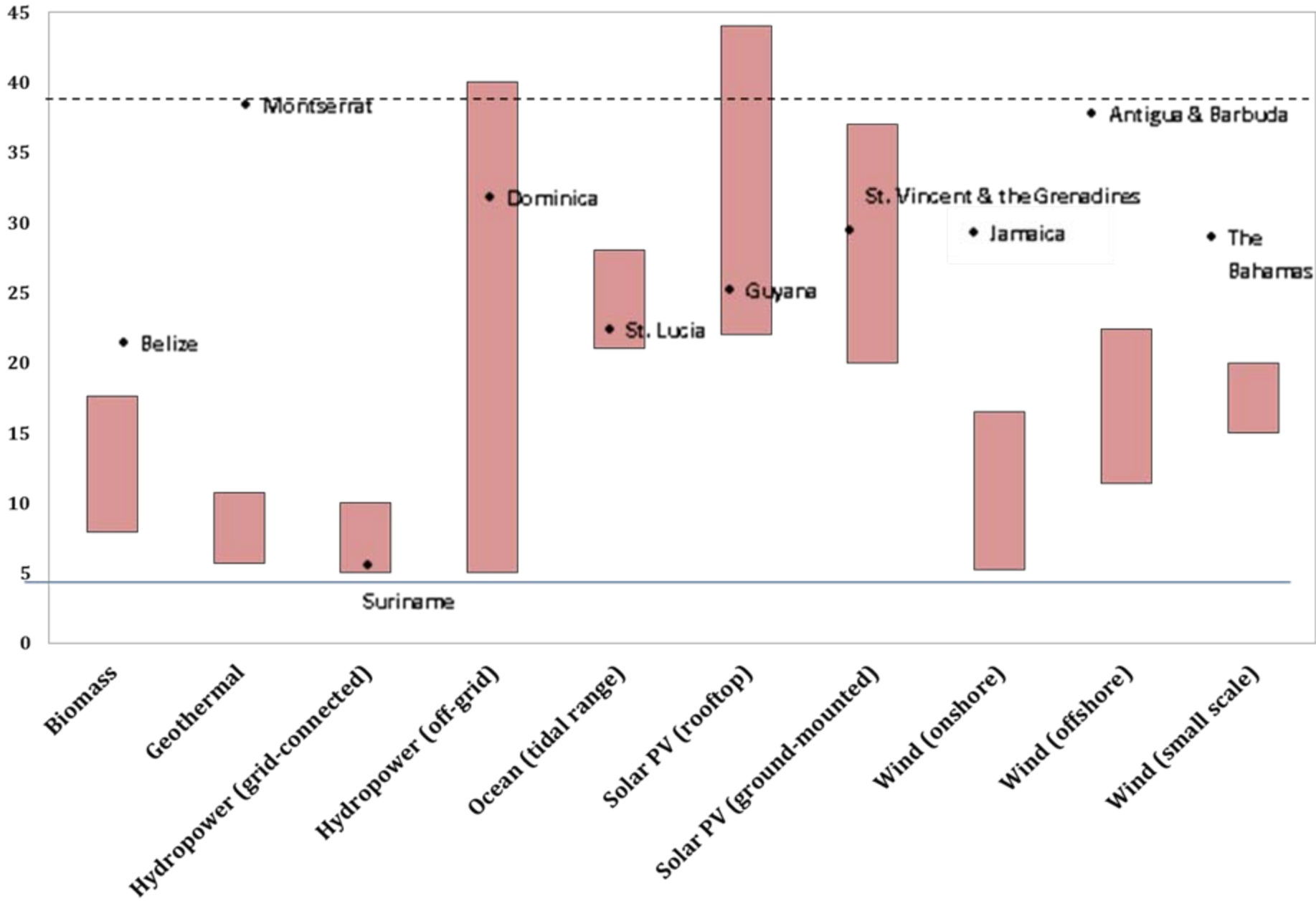
COUNTRY	ESTIMATED “DEVELOPABLE” POTENTIAL FOR RENEWABLES/MW						
	Geothermal	Hydro	Solar PV	Wind	Waste	Other	Total
Antigua & Barbuda	None	None	27	400	Negligible	Unknown	427
The Bahamas	None	None	58	15	20	Unknown	93
Barbados	None	None	26	10	40	Unknown	76
Belize	None	Limited	50	20	32	Unknown	102
Dominica	300	17	45	30	Negligible	Unknown	392
Grenada	200	1	20	5	Negligible	Unknown	226
Jamaica	None	113	650	70	45	Unknown	878
St. Kitts & Nevis	300	None	16	5	Negligible	Biomass: 10	331
St. Lucia	170	1	36	40	Negligible	Unknown	247
St. Vincent & The Grenadines	100	10	23	8	Negligible	Biomass: 4	145
Suriname	None	700	100	None	14	Biomass: 200	1,014
Trinidad & Tobago	None	None	308	50	5	Unknown	363
Total	1,070	842	1,359	653	156	214	4,294

^[1] Belize already generates around 40 per cent (ca. 32 MW) of its electricity from hydro-power sources.

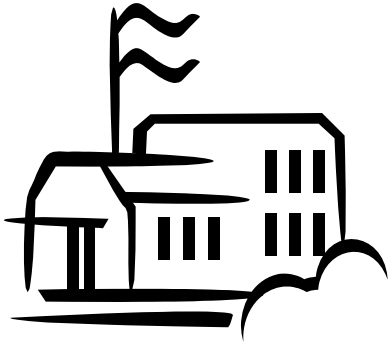
^[2] EBS (2010). Projections based on 4 MW of rice husk in Nickerie and 10 MW of sugarcane bagasse in Wagenigen.

Average Power Generation Cost for Renewables

CARICOM Electricity Tariffs are compared

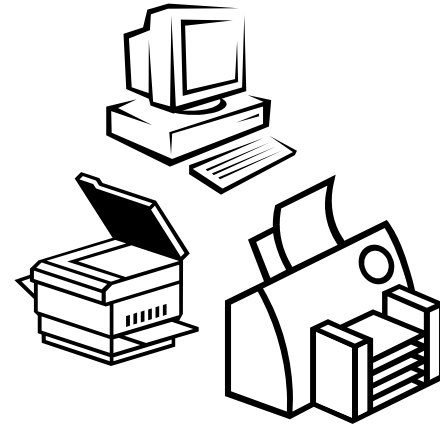


Some Opportunities for Efficient Energy-use



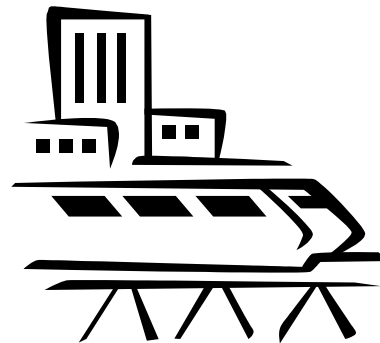
Buildings,
up to 30%

- Building envelope
- Lighting efficiency
- HVAC efficiency



Office equipment,
up to 35%

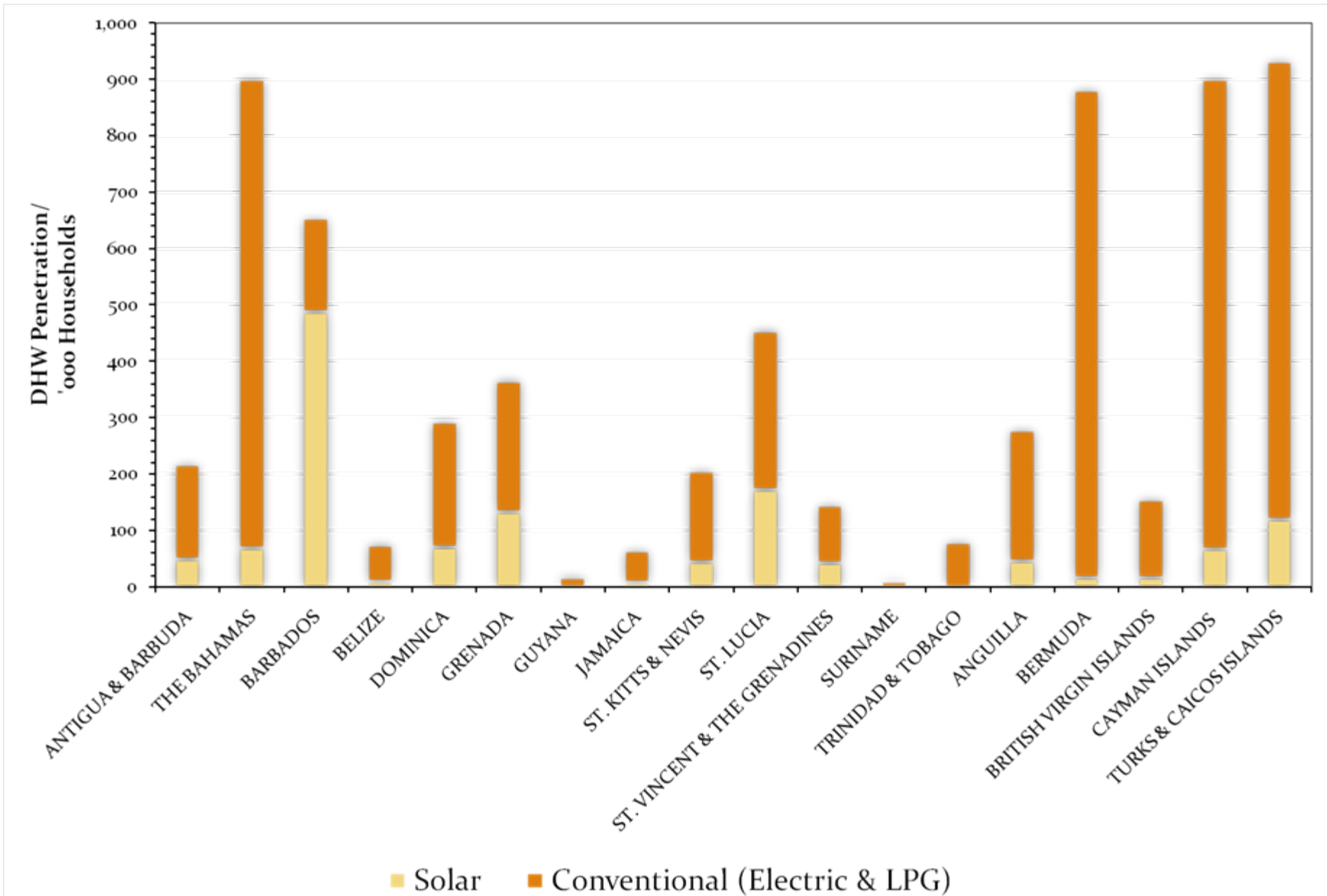
- Computers, printers, etc.
- Photocopiers
- Energy management systems



Transport,
up to 20%

Water Heating Penetration, Domestic

Source: CARICOM/EU Study (2011)



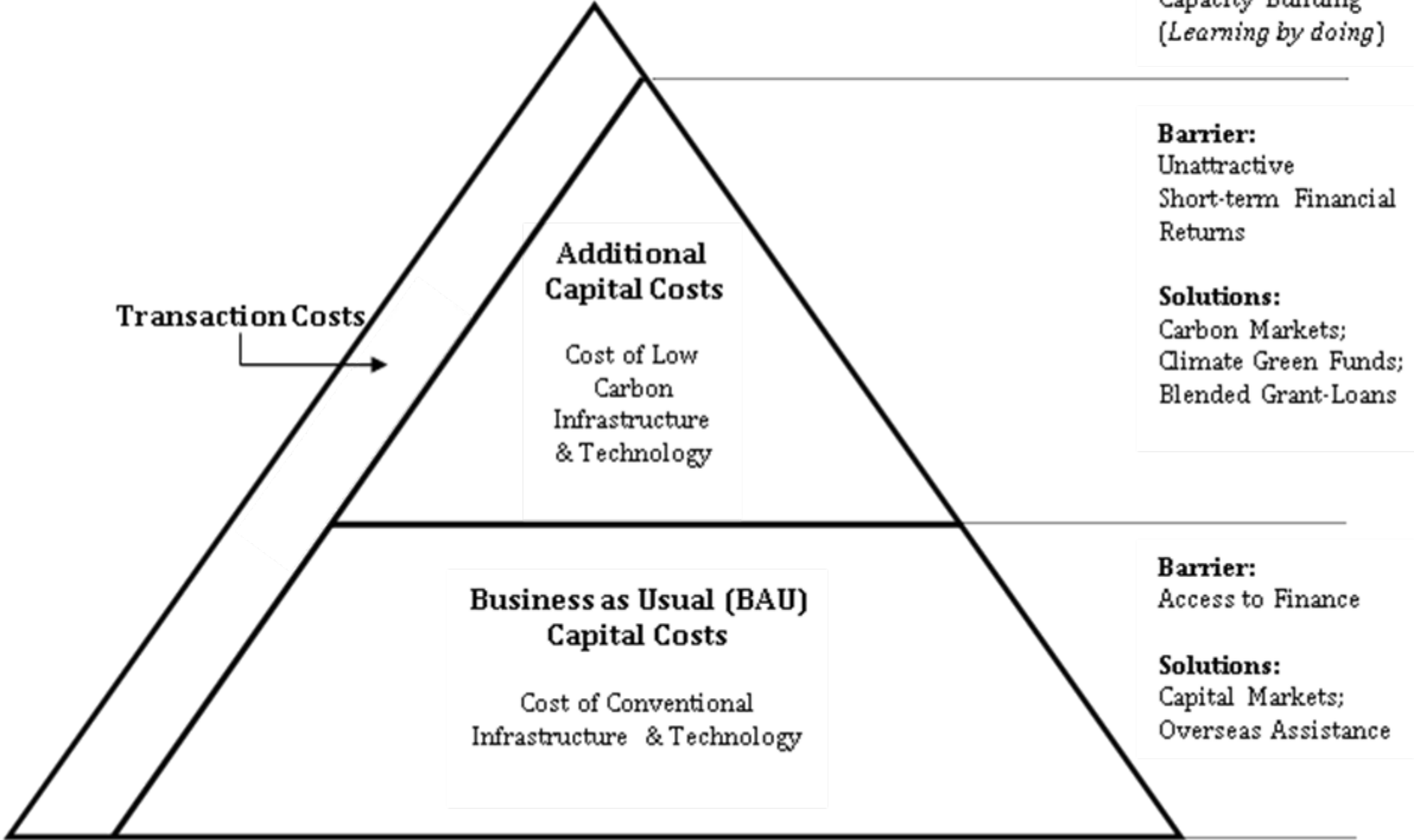
Some R3E Barriers in CARICOM

- There is an **over-focus** on “large-scale” RE generation.
- There is **not enough focus** on the transport sector.
- The process of **energy planning** is predominantly driven **by the electric utility**.
- The **utility regulator typically lacks resource and capacity** to with which to conduct “realistic” assessments and make judicious recommendations.
- There is a **lack of cross-sector harmonization**.
- There are significant **benefits to be derived from *energy efficiency* and “*avoided generation*”** applications.

Split-Incentive Barrier



Barriers to RE Project Financing



CARICOM EE Policies Status

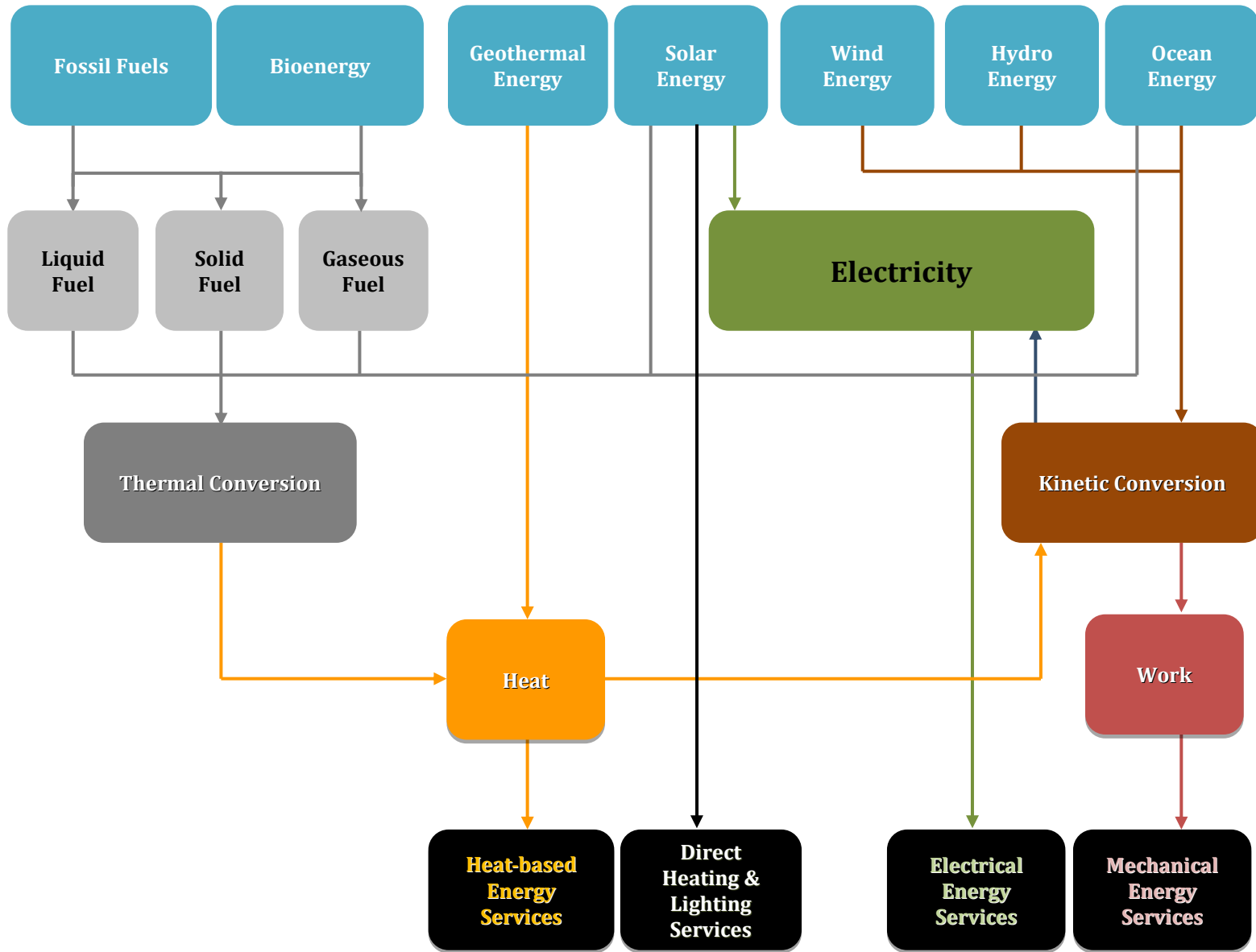
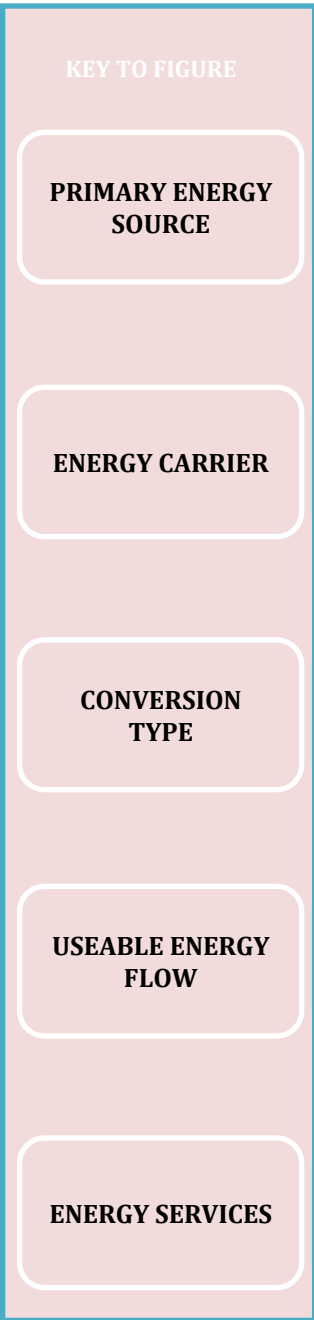
COUNTRY	ENERGY EFFICIENCY
Antigua and Barbuda	Improve <u>energy efficiency</u> by 30% over 15 years
The Bahamas	None
Barbados	Reduce <u>electricity consumption</u> by 22% compared to BAU by 2029
Belize	Improve <u>energy efficiency and conservation</u> by at least 30% by 2033 (proposed)
Dominica	None
Grenada	None
Guyana	None
Haiti	None
Jamaica	Reduce <u>Energy Intensity</u> from 21,152 to 6,000 BTUs per USD of GDP by 2030
Montserrat	None
St. Lucia	None
St. Kitts and Nevis	Reduce <u>projected electricity demand</u> 20% by 2015 (resulting in peak demand of 45.7 MW)
St. Vincent and the Grenadines	Reduce <u>projected increase in peak demand</u> by 5% by 2015 and 10% by 2020 Reduce <u>electricity generation</u> by 15% by 2020
Suriname	None
Trinidad and Tobago	None

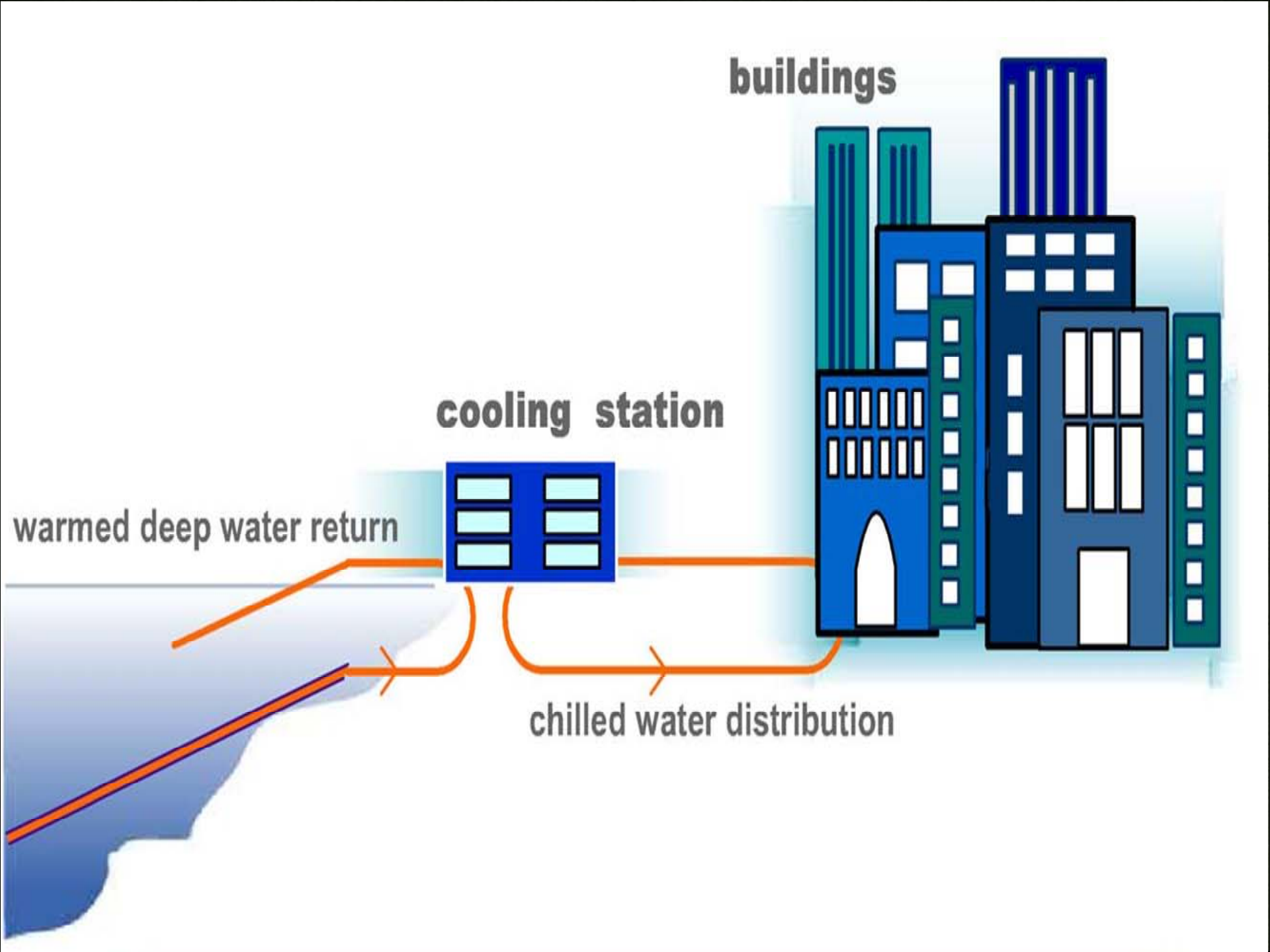
CARICOM EE Support Status

	National Energy Efficiency Standards	Tax Credits	Tax Reduction/Exemption	Public Demonstration	Prohibited Use/ Import of Incandescent Bulbs	Appliance Labelling Standards
Antigua & Barbuda	Under Review					
The Bahamas						
Barbados		X	X			Under Review
Belize						
Dominica	Under Review	Under Review		Under Review		
Grenada						
Guyana			X	X	X	
Haiti						
Jamaica	Under Review		X			X
Montserrat						
St. Kitts & Nevis						
St. Lucia			Under Review			X
St. Vincent & the Grenadines			Under Review			
Suriname	Under Review				Under Review	
Trinidad & Tobago	Under Review		X	Under Review	Under Review	Under Review

Crude Oil Price (US\$)	Percentage of Petroleum Import Reduction					
	Base Case Annual Expenditure by SIDS (Billions US\$)	Resulting Level of Savings From 10 Percent Reduction (Billions of US\$)	Resulting Level of Savings From 20 Percent (Billions of US\$)	Resulting Level of Savings From 30 Percent Reduction (Billions of US\$)	Resulting Level of Savings From 50 Percent Reduction (Billions of US\$)	Resulting Level of Savings From 60 Percent Reduction (Billions of US\$)
30	9.24	0.924	1.844	2.772	4.62	5.544
40	12.32	1.232	2.464	3.696	6.160	7.392
50	15.40	1.540	3.080	4.620	7.700	9.400
60	18.48	1.888	3.776	5.664	9.440	11.328
70	21.56	2.156	4.132	6.468	10.78	12.936
80	24.64	2.464	4.928	7.392	12.32	14.784
90	27.72	2.772	5.540	8.316	13.86	16.632
100	30.80	3.080	6.160	9.240	15.40	18.480
110	33.88	3.388	6.776	10.164	16.94	20.328
120	36.96	3.696	7.392	11.088	18.48	22.176
130	40.04	4.004	8.008	12.012	20.02	24.024
140	43.12	4.312	8.624	12.936	21.56	25.872
150	46.20	4.620	9.240	13.860	23.10	27.720

Various paths of energy from source to service; lines indicate possible energy pathways.





buildings

cooling station

warmed deep water return

chilled water distribution

المنتدى العربي للبيئة والتنمية
ARAB FORUM FOR
ENVIRONMENT AND DEVELOPMENT



Institutional Challenges for Water-Energy Nexus

ARAB PERSPECTIVE

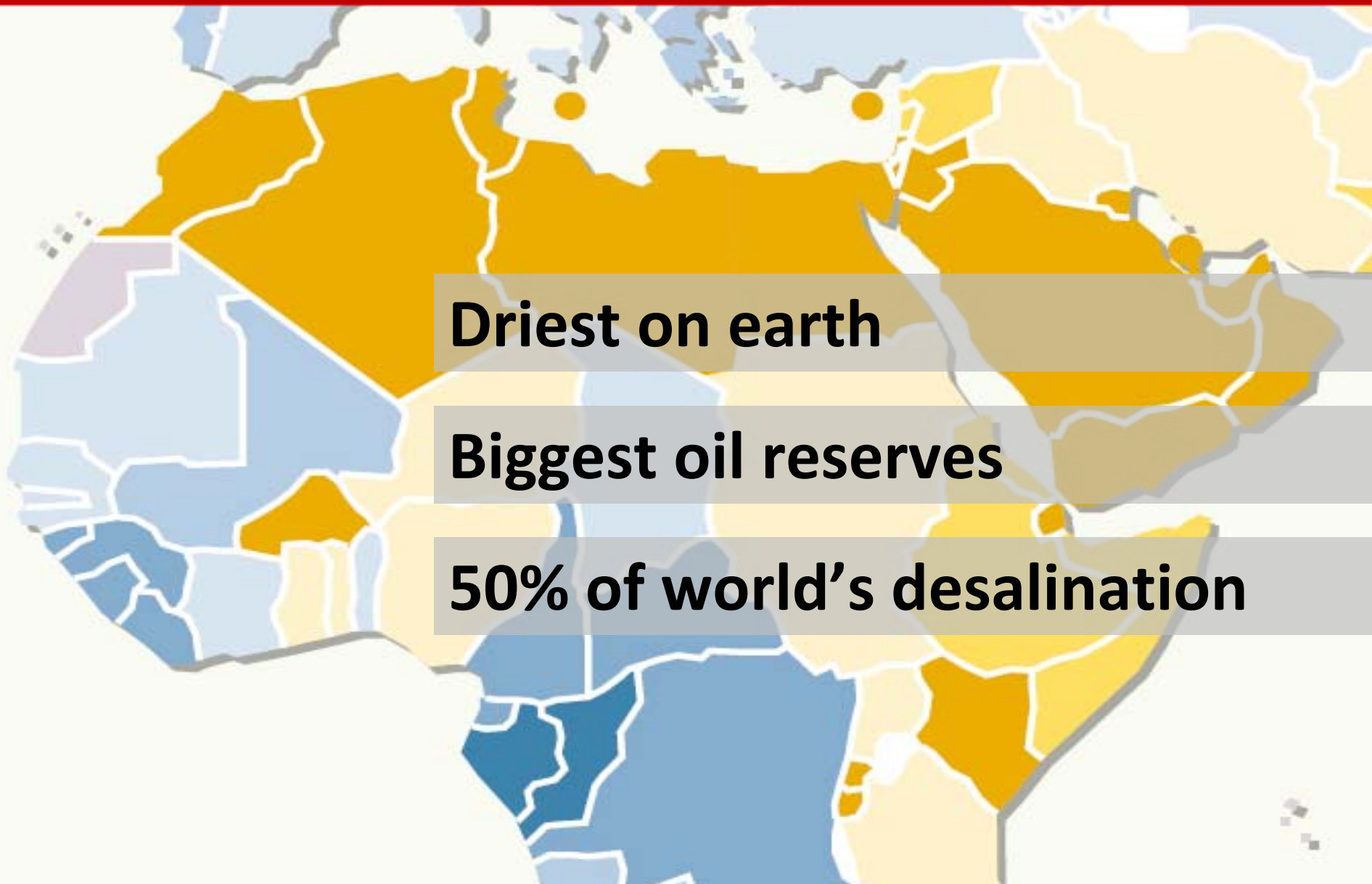
Najib Saab

Secretary General
Arab Forum for Environment and Development (AFED)

Thematic Debate of the UN General Assembly on the role of Water, Sanitation
and Sustainable Energy in the Post 2015 Development Agenda
New York, 18-19 February 2014



Arab Region



Driest on earth

Biggest oil reserves

50% of world's desalination

Climate Change



2100:

25% decrease in precipitation

25% increase in evaporation

Water Desalination, Distribution, Pumping



50% of total energy

Irrigation efficiency world's lowest

**Per capita water consumption
world's highest**

Energy

Energy intensity and per capita carbon emissions highest in the world

50 million without access to modern energy

Growth in consumption 8%
Growth in GDP 4%

Average energy efficiency 50%

Subsidies



**Root of inefficiency, overuse,
excessive pollution and
environmental degradation**

Price of water:

Average paid 35% of the cost

Desalinated water 10% of the cost

90% of subsidies go to the rich

Will exporters import oil?



Chatham House:

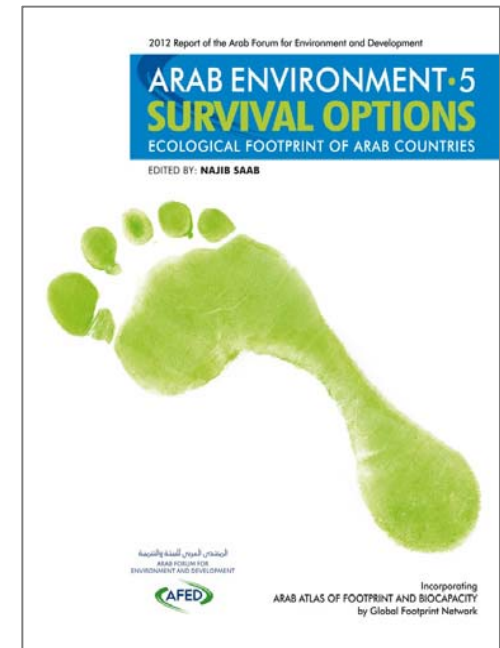
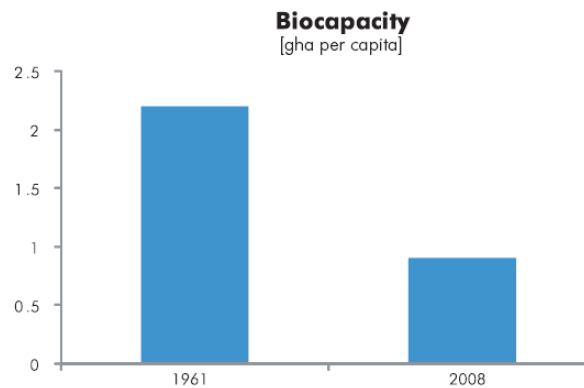
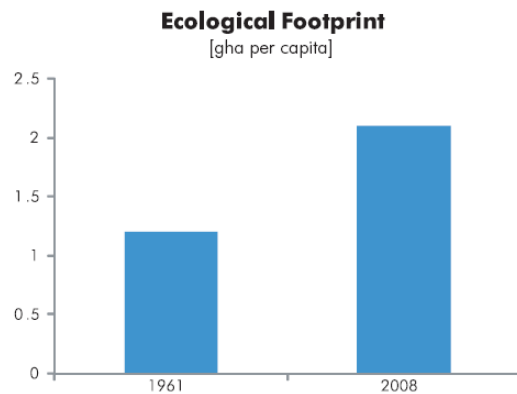
Demand doubles by 2024

More groundwater depletion

More energy for desalination

Ecological Footprint

Growth targets should respect the regenerative limits of nature



Good News

Arab Energy efficiency framework

Abu Dhabi water strategy

Saudi Arabia: Energy efficiency program and 33% renewables by 2032

Morocco: \$11 billion to build 9 gigawatts renewables

Reforms

Institutional and policy measures

Subsidies to be phased out

Well-defined policies

Sound regulatory framework



Energy efficiency

Cleaner technology

Renewable sources


Advance through science

Regional cooperation


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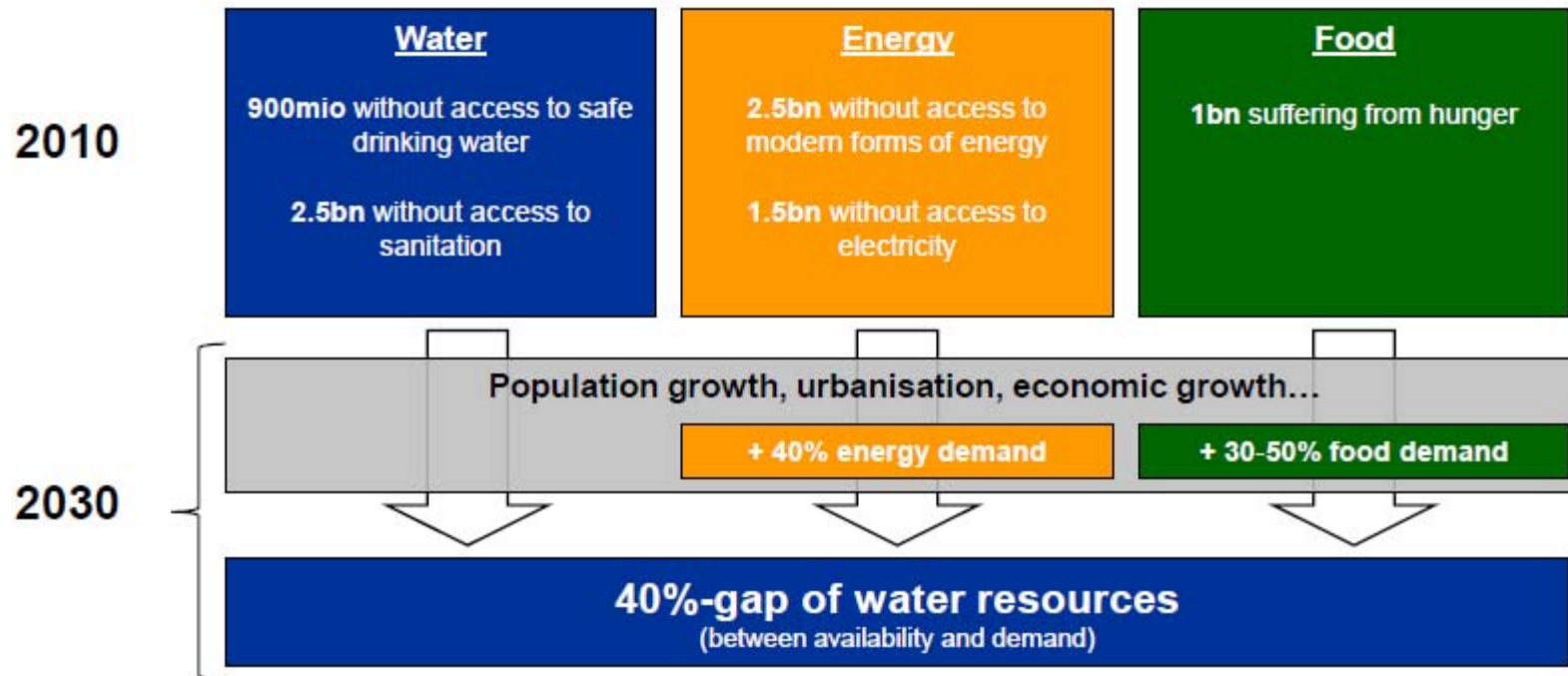
Reflects the Water-Energy
Nexus in the post 2015
framework – options and
considerations



Felix Dodds

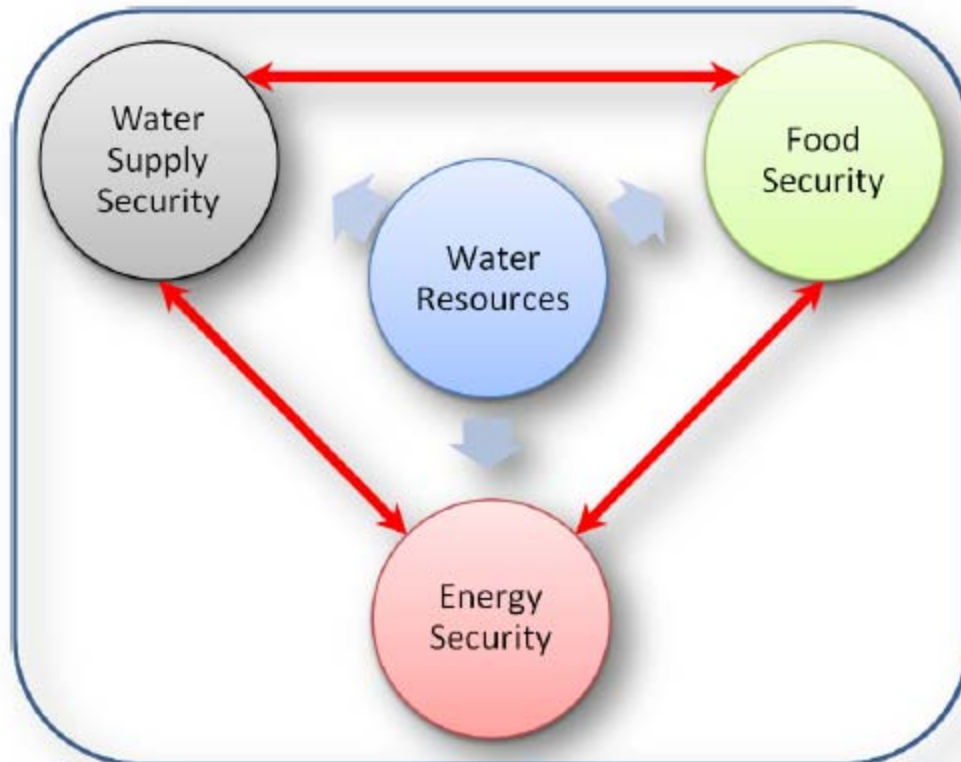
www.felixdodds.net

AT THE TIPPING POINT



THE WATER-ENERGY-FOOD SECURITY NEXUS

Bonn2011 Conference
The Water, Energy and Food Security Nexus
Solutions for the Green Economy
16-18 November 2011



Think interlinked!

Being prepared for a resource scarce future and meeting today's access challenges (water, energy and food) requires solutions that take into account all three sides of the water, food and energy nexus.

Nexus

- Water and Energy
- Corporate – Stewardship of the Nexus
- Science challenges of the Nexus

Key take away messages

- Any Water-Energy or Food Goal *should have integrated* Nexus *targets and indicators*
- Corporate stewardship can be enhanced by creating an *enabling framework* to invest in water efficient energy provision
- Increased incentives for business innovation
- Global Framework for Sustainability Reporting – to integrate Nexus into industry reporting
- *Low carbon* usually means low water use

Key Take away messages

- To address biofuel concerns support agriculture practices that increase soil fertility, water holding capacity and CO2 sequestration
- Ensure universal access to safe water & sanitation as well as modern energy services without exacerbating water shortages and green house gas emissions
- Support increased Nexus research and develop capacity building programmes to enable governments at all levels to address Nexus related issues

Einstein

"Two things are infinite: the universe and human stupidity; and I'm not sure about the universe."

Join us at the Nexus Conference

<https://nexusconference.web.unc.edu/>