



الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

Enhancing Environmental Sustainability of Healthcare Facilities: Challenges & Opportunities

Your
global
future
begins
here

PhD WR Brunel Program
London - UK

Salman Ali Shehab

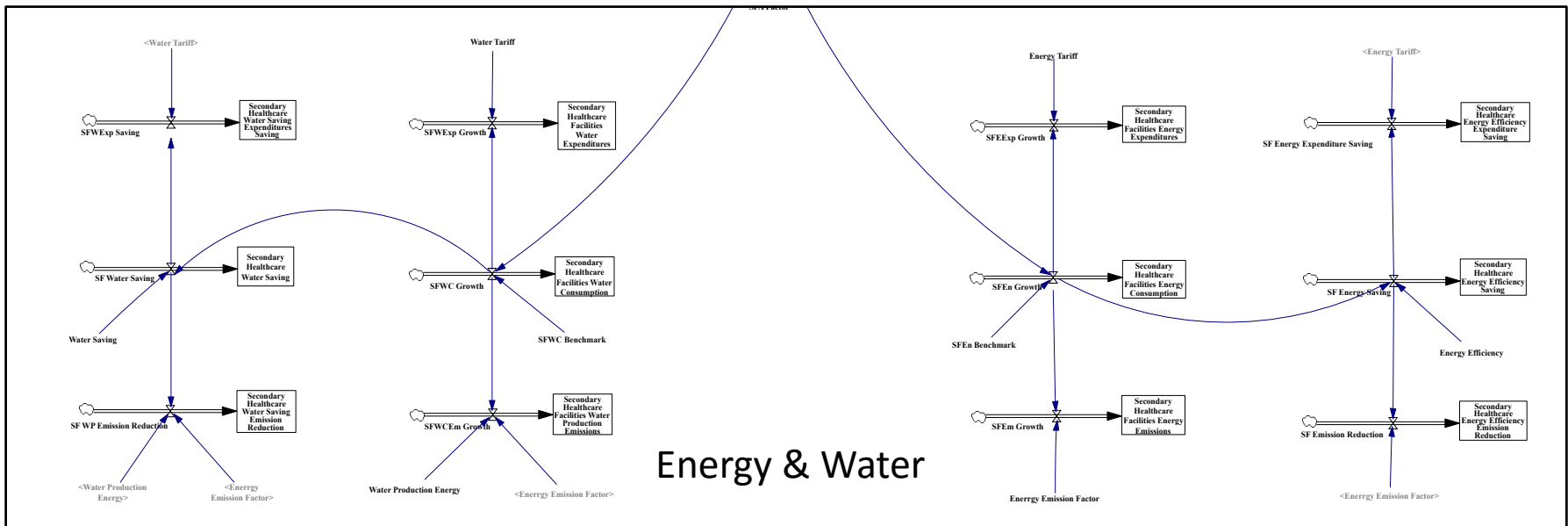
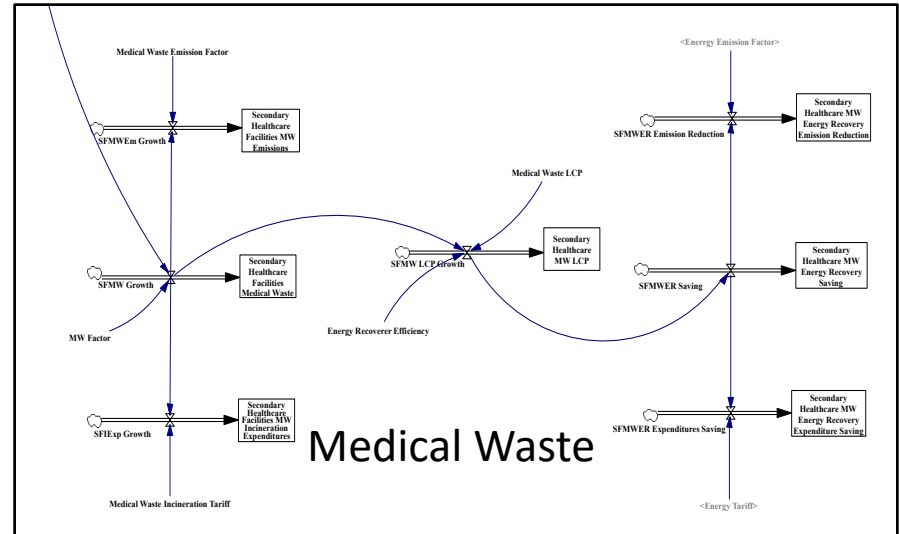
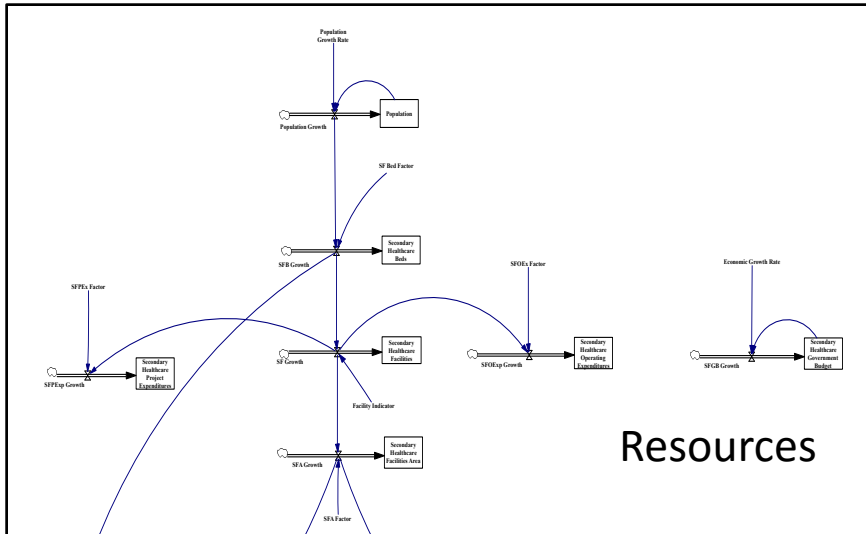
- Any Sustainable Healthcare System must be friendly with the local environment within which it exists,
- Healthcare Buildings have large impact on environment. The impact is generated from two sources:
 - Energy Consumed, and
 - Waste Generated.
- In order to protect Environment, Healthcare Facilities must have an efficient Management and Operation Strategies of these sources.



- As a complementary to earlier works, this research identified a third source of Healthcare Buildings large impact on environment that is :
 - Water Consumption.
- Availability of adequate water for different healthcare applications, especially in countries with limited fresh water resources like Bahrain, is a real environmental challenge needs to be addressed,
- It also identified a group of environmental / occupational challenges that can expose personnel and environment to high risks such as X-Rays leaks, Radioactive materials radiations, harmful Chemicals spills.

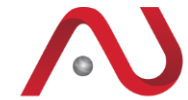
- As population grows, the need for new Healthcare Facilities grows.
- As Healthcare Facilities grow, the environmental challenges (energy consumption, water consumption, waste generation, and CO2 emissions) grow.
- As environmental challenges grow, diseases and health risks grow.
- As diseases and health risks lead to death, it reduces population growth.
- As population grows, the need for new Healthcare Facilities grows.
- As Healthcare Facilities grow, the healthcare expenditures grow. Utilities cost contributes to the expenditures.
- As diseases and health risks grow, healthcare expenditures grow.
- As healthcare expenditures improve quality of life, it can contribute to population growth.

Sustainable Healthcare SD Model



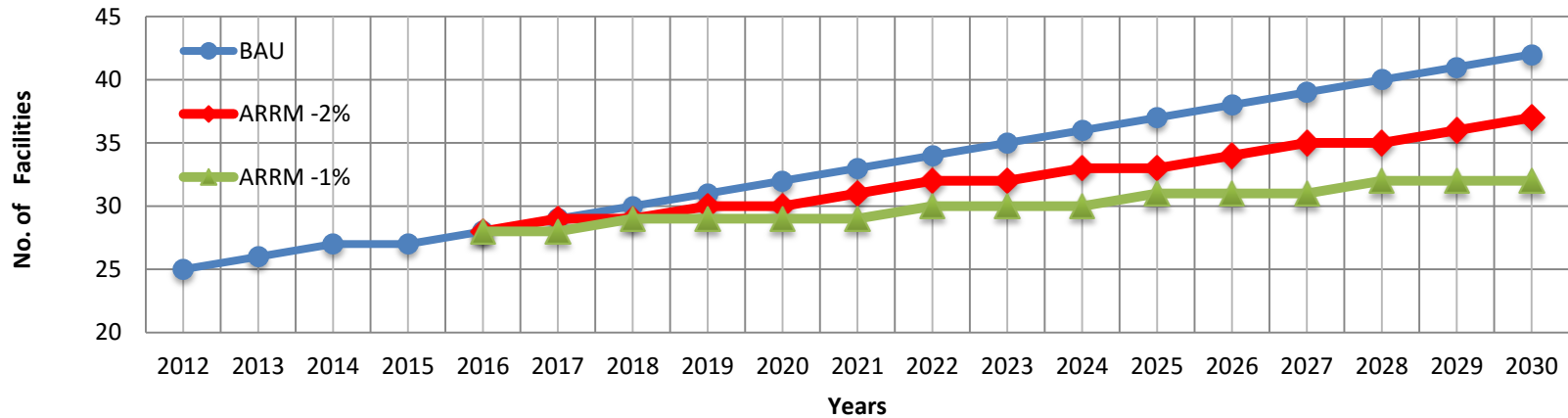
- Business As Usual (BAU)
 - 3% Population Growth Scenario
- Administrative Rules & Regulation Management (ARRM)
 - 2% Population Growth Scenario
 - 1% Population Growth Scenario
- Technical Progress (TP)
- Time Management (TM)
- Combined Policies

Policy Scenarios of Sustainable Healthcare Results

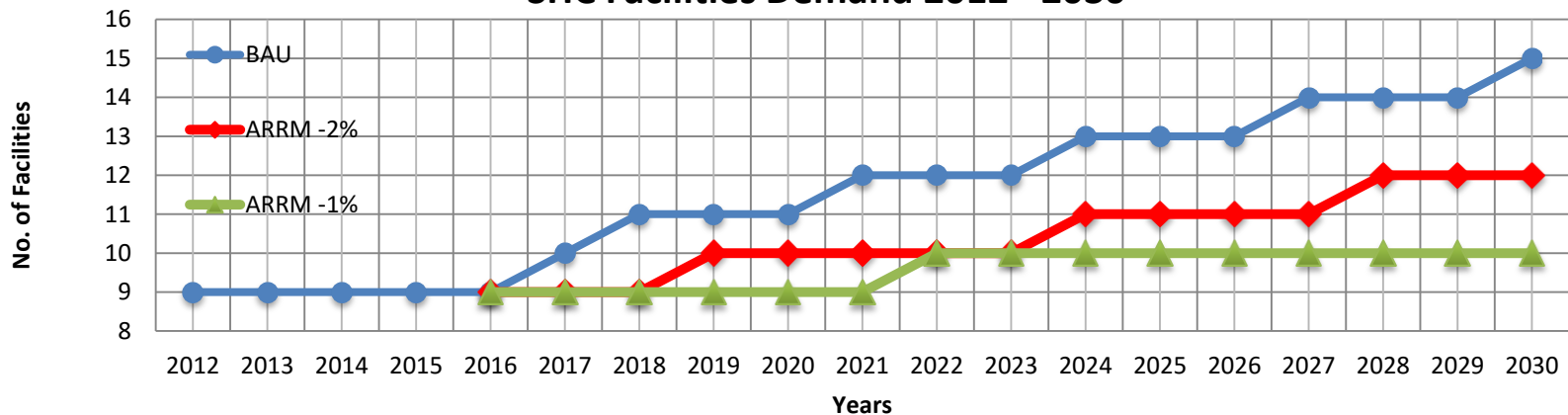


الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

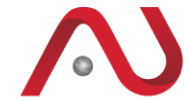
PHC Facilities Demand 2012 - 2030



SHC Facilities Demand 2012 - 2030

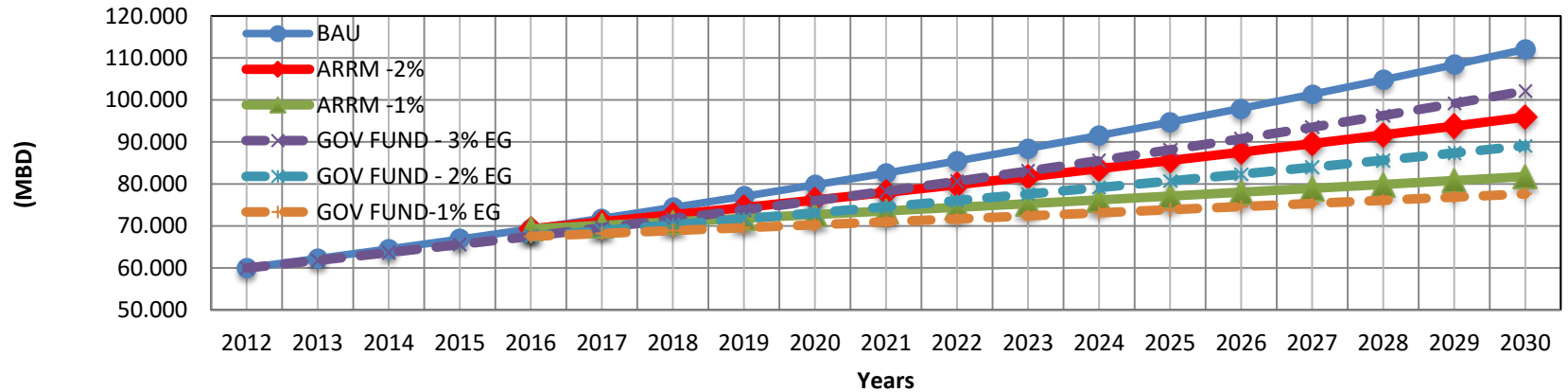


Policy Scenarios of Sustainable Healthcare Results

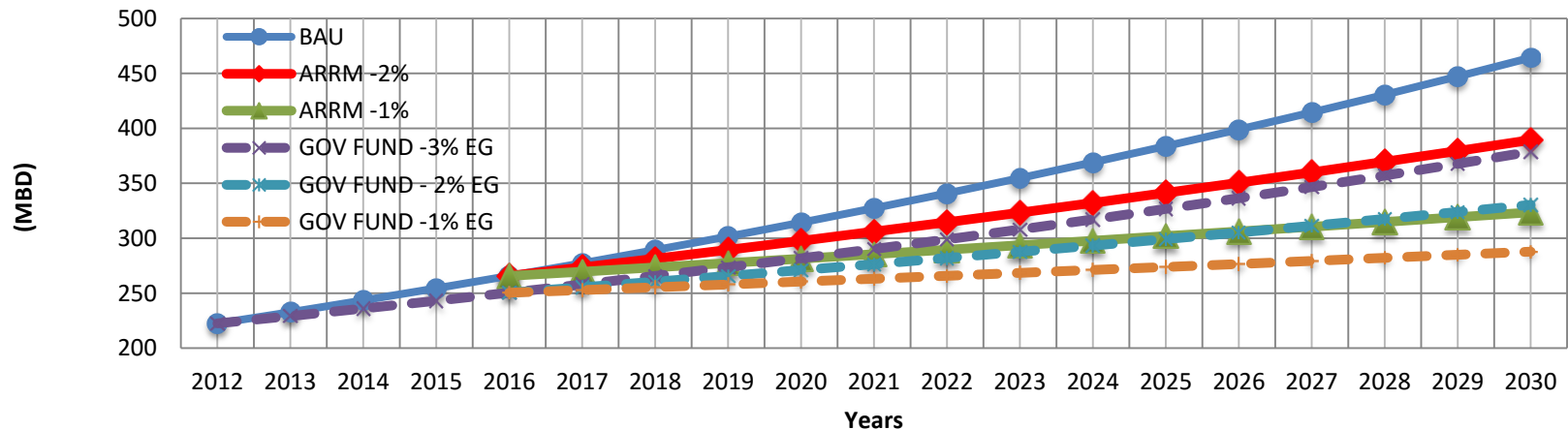


الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

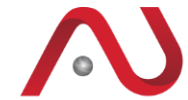
PHC Operating Expenditures 2012 - 2030



SHC Operating Expenditures 2012 - 2030

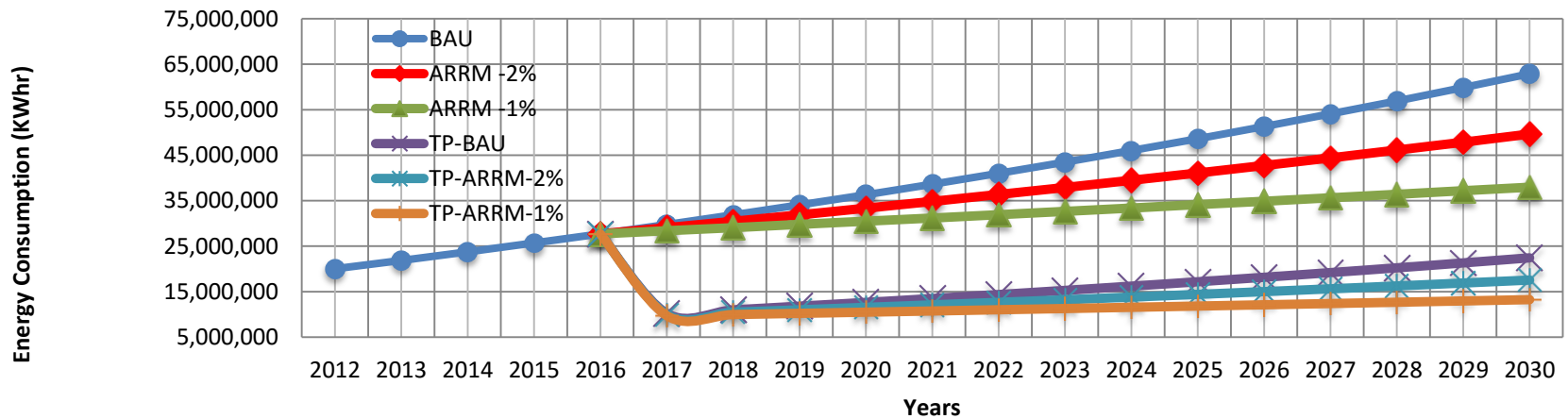


Policy Scenarios of Sustainable Healthcare Results

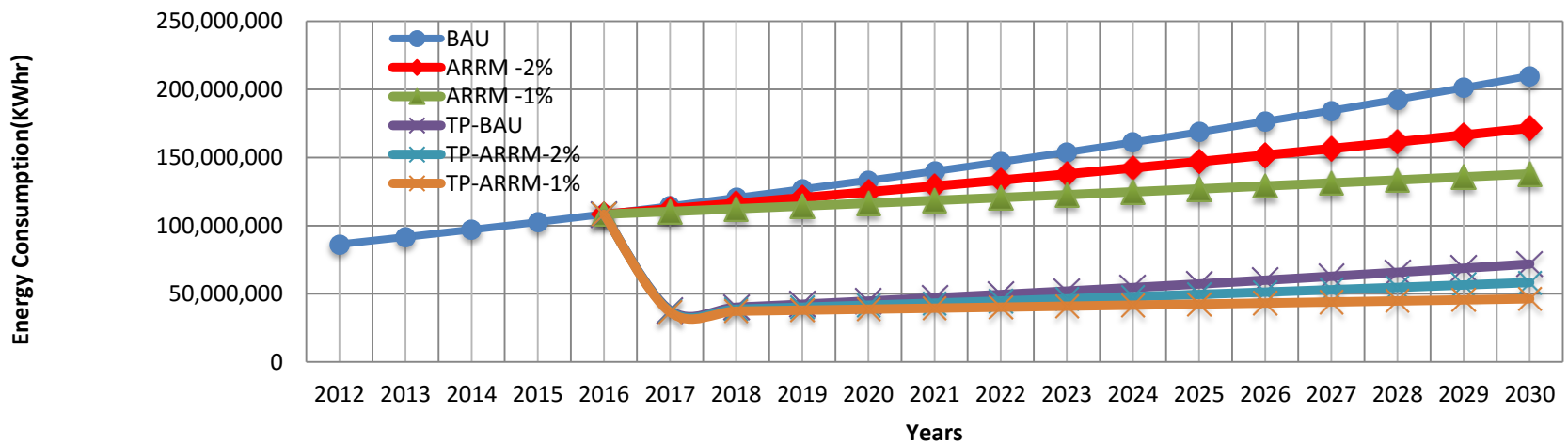


الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

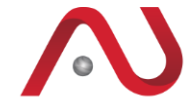
PHC ENERGY CONSUMPTION 2012 - 2030



SHC ENERGY CONSUMPTION 2012 - 2030

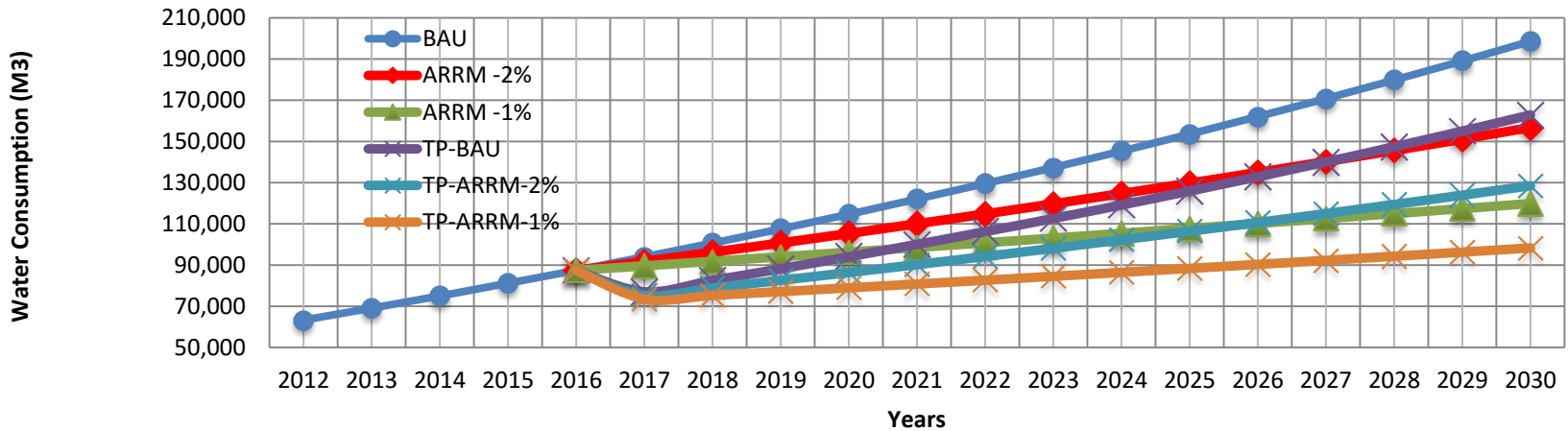


Policy Scenarios of Sustainable Healthcare Results

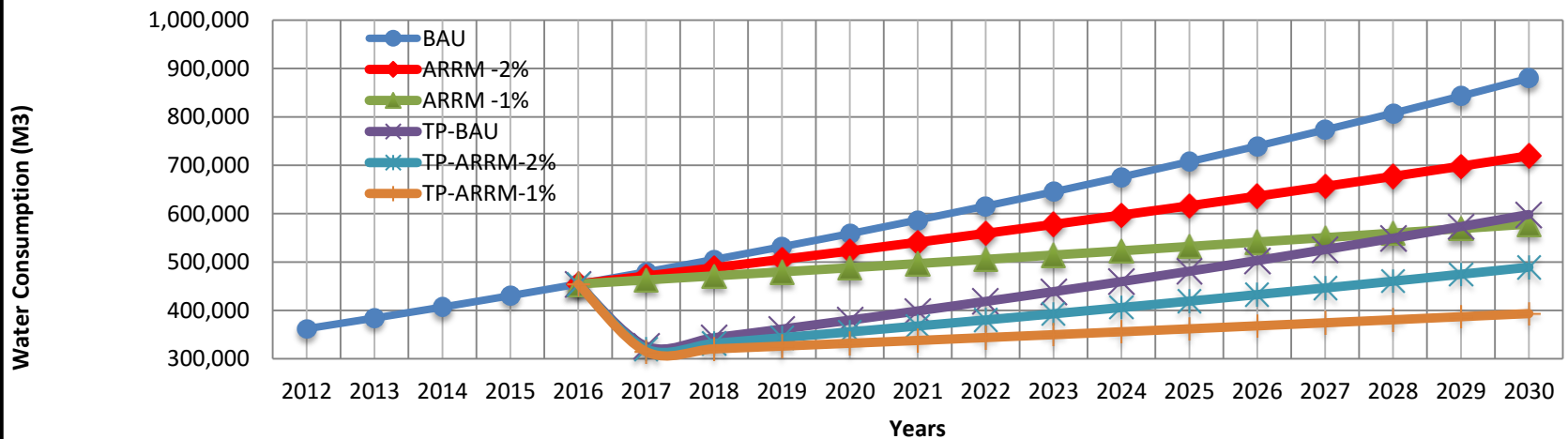


الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

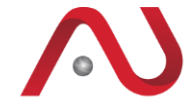
PHC WATER CONSUMPTION 2012 - 2030



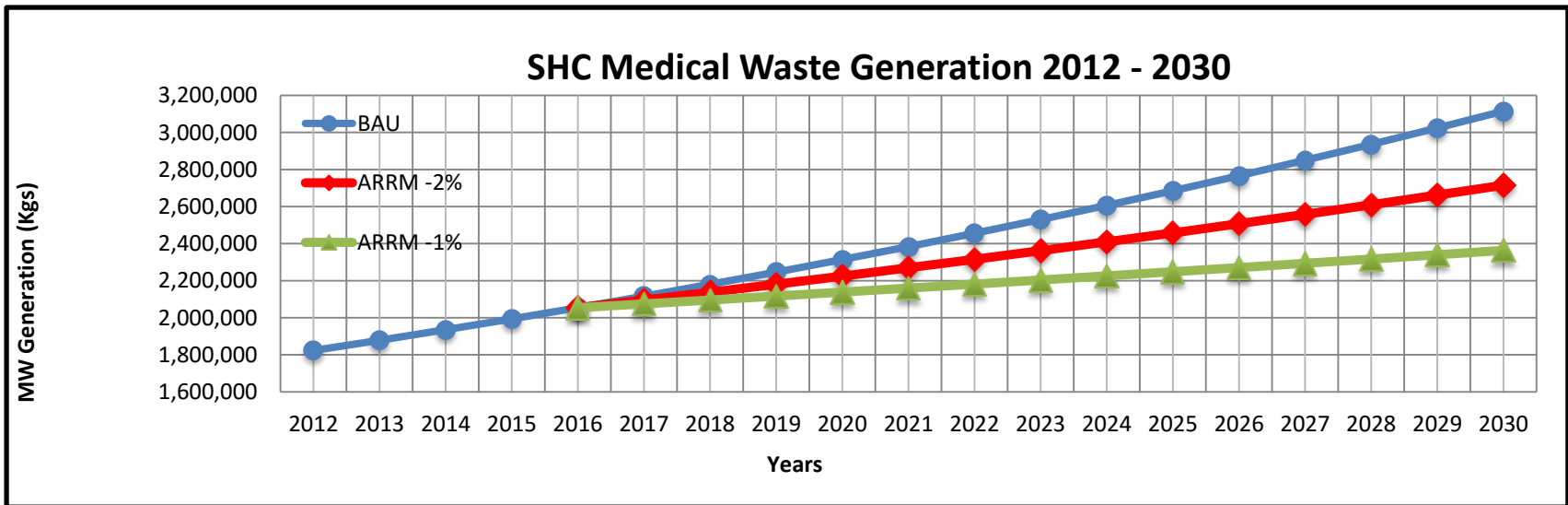
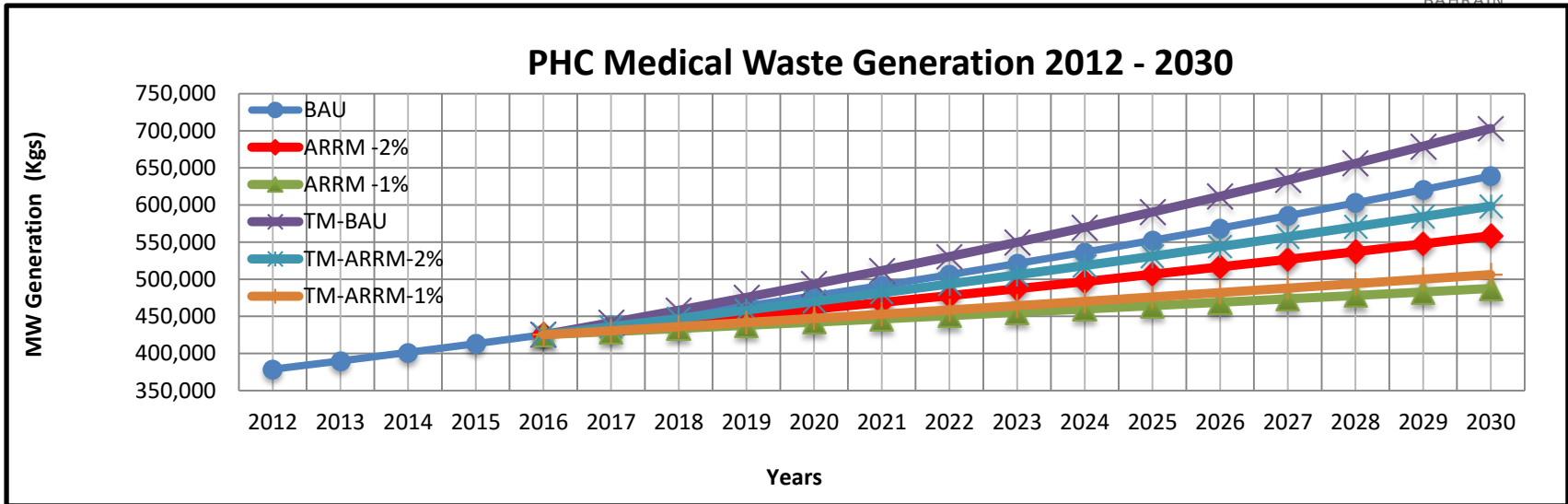
SHC WATER CONSUMPTION 2012 - 2030



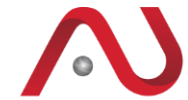
Policy Scenarios of Sustainable Healthcare Results



الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

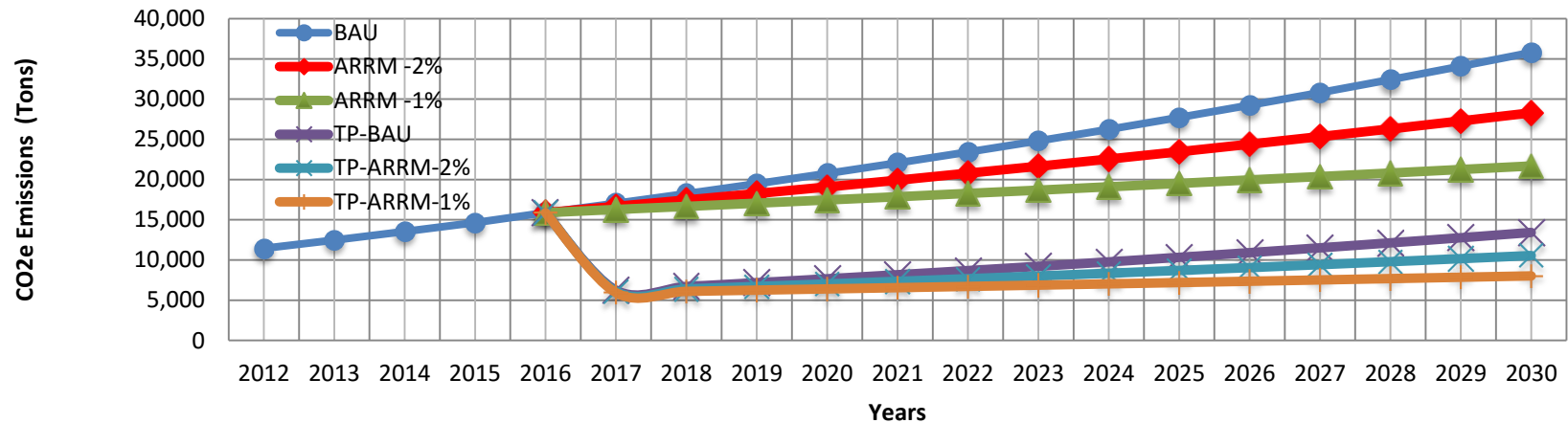


Policy Scenarios of Sustainable Healthcare Results

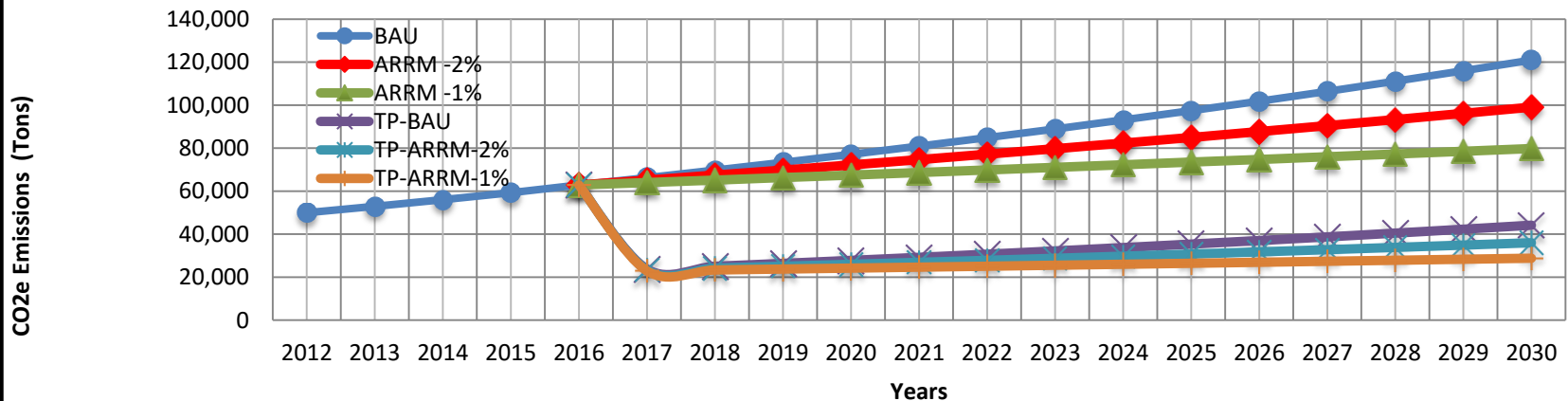


الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

PHC CO2e EMISSIONS 2012 - 2030



SHC CO2e EMISSIONS 2012 - 2030



Research Outcomes

- SD Model shows high potential of energy saving in Healthcare Buildings by deployment of energy efficiency and renewable energy technologies.
- The cost of energy efficiency and renewable energy technologies represent a barrier for wide-scale applications. Special funds and incentives are required to motivate the investment in this field.
- The lack of expertise in energy efficiency and renewable energy technologies represent another barrier for wide-scale applications. Scientific collaborations with expert institutions is necessary to enforce local expertise.
- Special funding and transfer of technologies agreements with some leading firms such as UN, Gov. and Non-Government Organizations are needed.
- Safe recycling of waste water (Gray Water) of some Healthcare processes is highly recommended to reduce water consumption.
- Energy recovery from Medical Waste is highly recommended to offset CO₂e emissions.

- Is the proposed SD Model Dynamic enough to handle new scenarios such as :

What is the effect of changing Medical Fees for expatriates on Healthcare Facilities?



The screenshot shows a news article from DT NEWS, dated 21-Jan-2017. The article is titled "Medical fees for expats hiked" and is written by dt news. The main image shows a doctor in a white coat with a stethoscope. The article text states that the Health Ministry has informed that the medical care cost for non-Bahrainis at public hospitals and health centres will increase from BD3 to BD7, effective Friday. This decision was passed by Faeqa bint Saeed Al Saleh, Minister of Health, and published in the Official Gazette. The decision stipulates that non-Bahrainis are obliged to pay BD7 for general medical consultancy and dental consultancy. It also mentions that non-Bahrainis will have to purchase their medicines from private pharmacies. However, it was also added that expats who work in the public sector and their dependents will be excluded from the new price hike.

شكراً

Thank You