



Energy Futures of Mauritius in a Carbon Constrained World

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Outline of presentation

1. About the Project
2. The methodology – Systems Approach
3. Energy & the Production Function
4. Some Preliminary Results
5. On the way to NAMAs

1 Objectives

Overall: Provide a method for **evidence-based policy decision making**

Specific:

1. Develop a **self-consistent and transparent SD model** that explains the **historical development** of Mauritius, including its GHG emissions;
2. Investigate the emission reduction potential of the actions and measures identified in the **long-term energy strategy**;
3. **Construct carbon intensity curves to 2050** based on different GHG stabilization scenarios, while taking into account the projected growths in the economy and population;
4. Identify technologies and investment costs for achieving low-carbon development - **Sectoral Crediting under dynamic baselines**; and
5. Propose a **framework for developing Nationally Appropriate Mitigation Actions (NAMAs)**.

Timelines & Funding

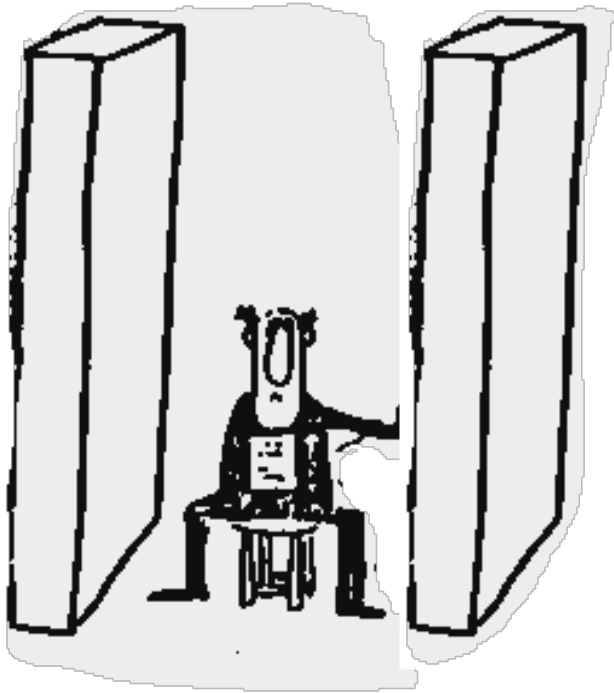
1. Start date: 1 June 2012;
2. Duration: 24 months (i.e. End date – 31 May 2014);
3. Total funding: Rs 593,600.

AUTHORS KINDLY ACKNOWLEDGE
THE FINANCIAL SUPPORT OF **MRC**
(~72% - MRC/RUN-1205) AND **MoESD**
(~28% from AAP – MRC/RUN/AAP-1209)

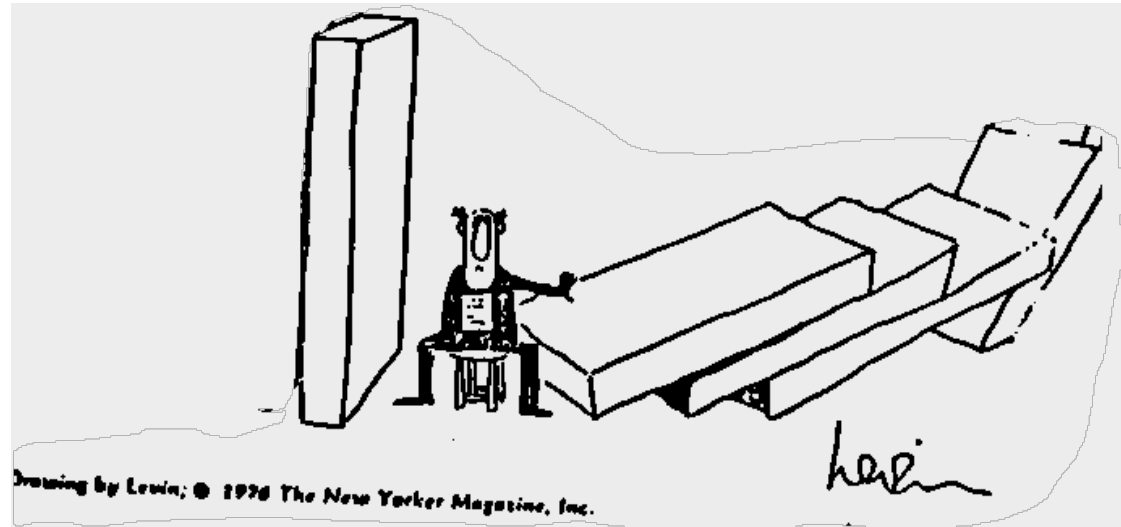
2

Why Take a Systemic View

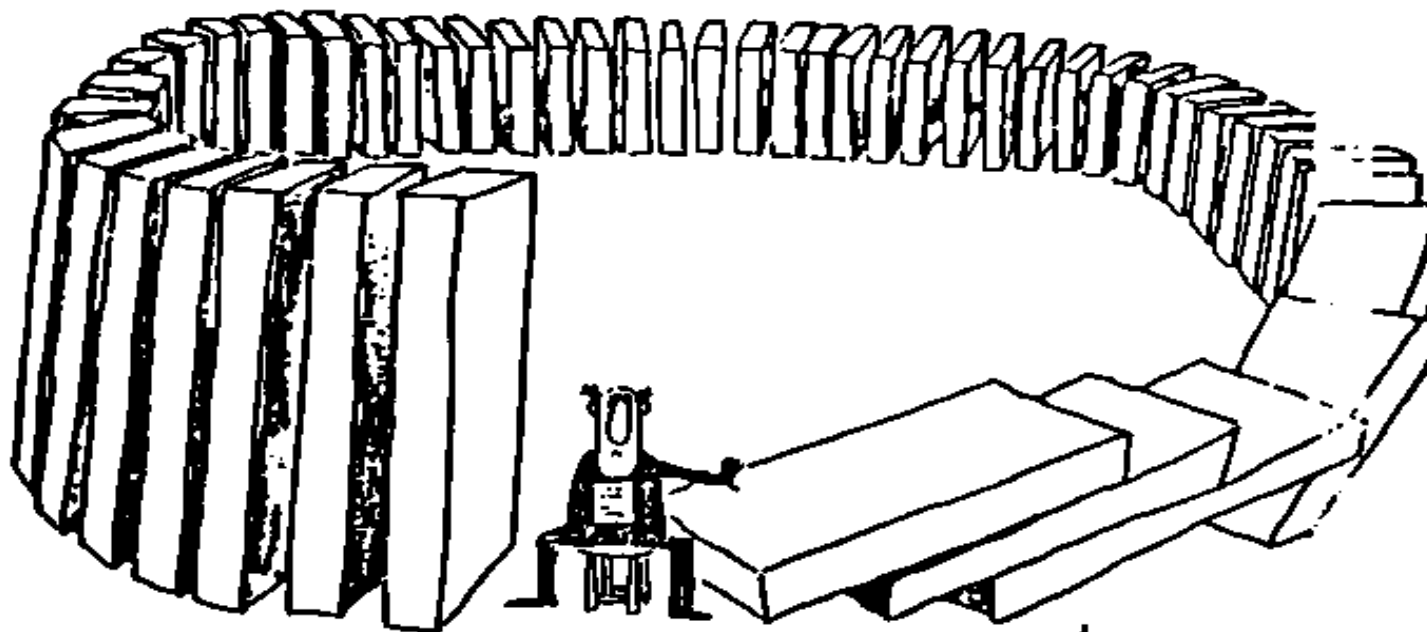
Removing a problem,



may create feedback and delays to



To yield unintended consequences!



Drawing by Lewis; © 1976 The New Yorker Magazine, Inc.

Lewis

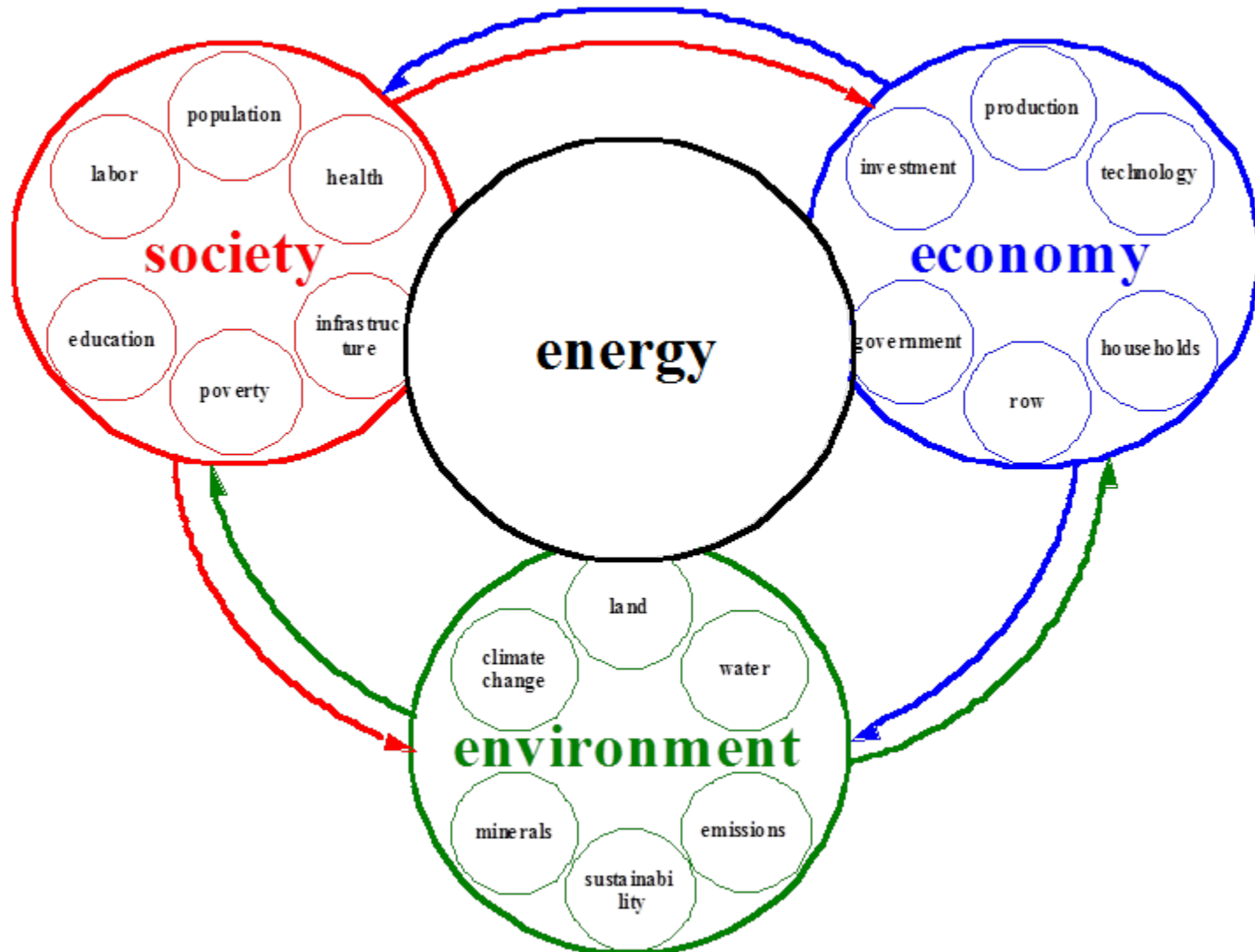
Systems Approach

1. Need to understand the structure of a system and all the decision making rules (formal & informal; explicit & implicit) within system;
2. Establish the causal relationships between all variables within the system;

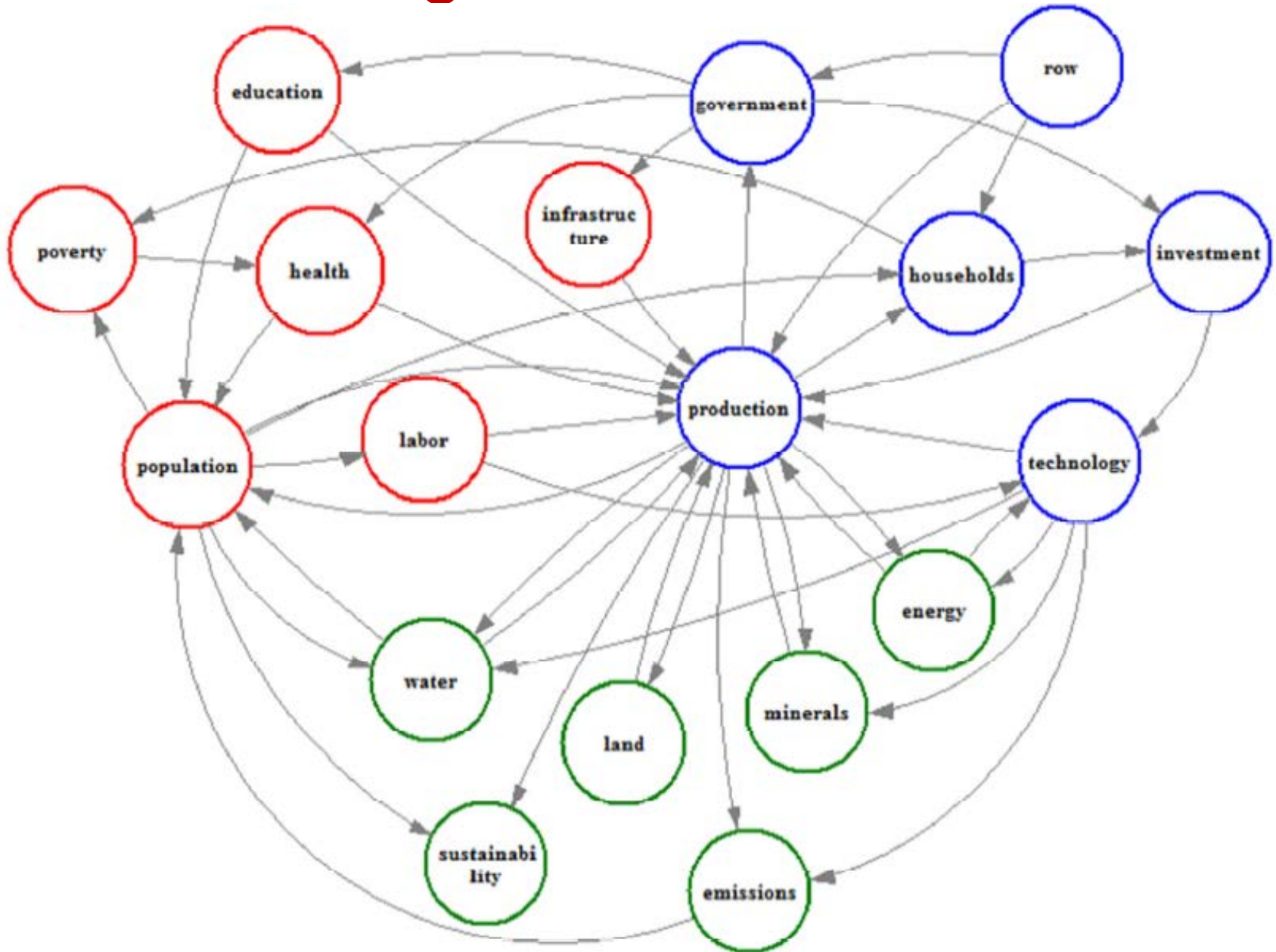
CANNOT BE ACHIEVED USING MENTAL MODELS IN A COMPLEX SYSTEM SUCH AS SOCIETY-ECONOMY-ENVIRONMENT

2

Basic Structure of SD Model



Horizontal Integration of Sectors



What does SD Modelling Offer?

- Checks **consistency** and **feasibility** of major objectives and assumptions (e.g. 'low-carbon' & 'climate resilience'; green/blue economy; poverty alleviation; ESTP)
- Deepens analysis of policies and programs, **across sectors** and **over time** (reconciliation of different time horizons)
- Informs decision makers of **longer-term implications of policy choices** & better **coordinated decision making**
- Provides **scenarios**, not perfect projections
- Can deal with **uncertainty** and **stochastic processes**
- Allows for easy **monitoring and evaluation** (e.g. Country-specific indicators, MDGs, SDGs, any other ...)
- Supports an **evidence-** and **results-based approach** to build resilience

3 Structure of System Dynamics Model

- **Society: 4 modules**

Population, Education, health care, roads

- **Economy: 5 modules**

Firms, households, government, banks, energy bill

- **Environment: 3 modules**

Land, water, air emissions

- **Energy: 22 modules**

Primary demand, final consumption, power supply, prices, investment, and more...

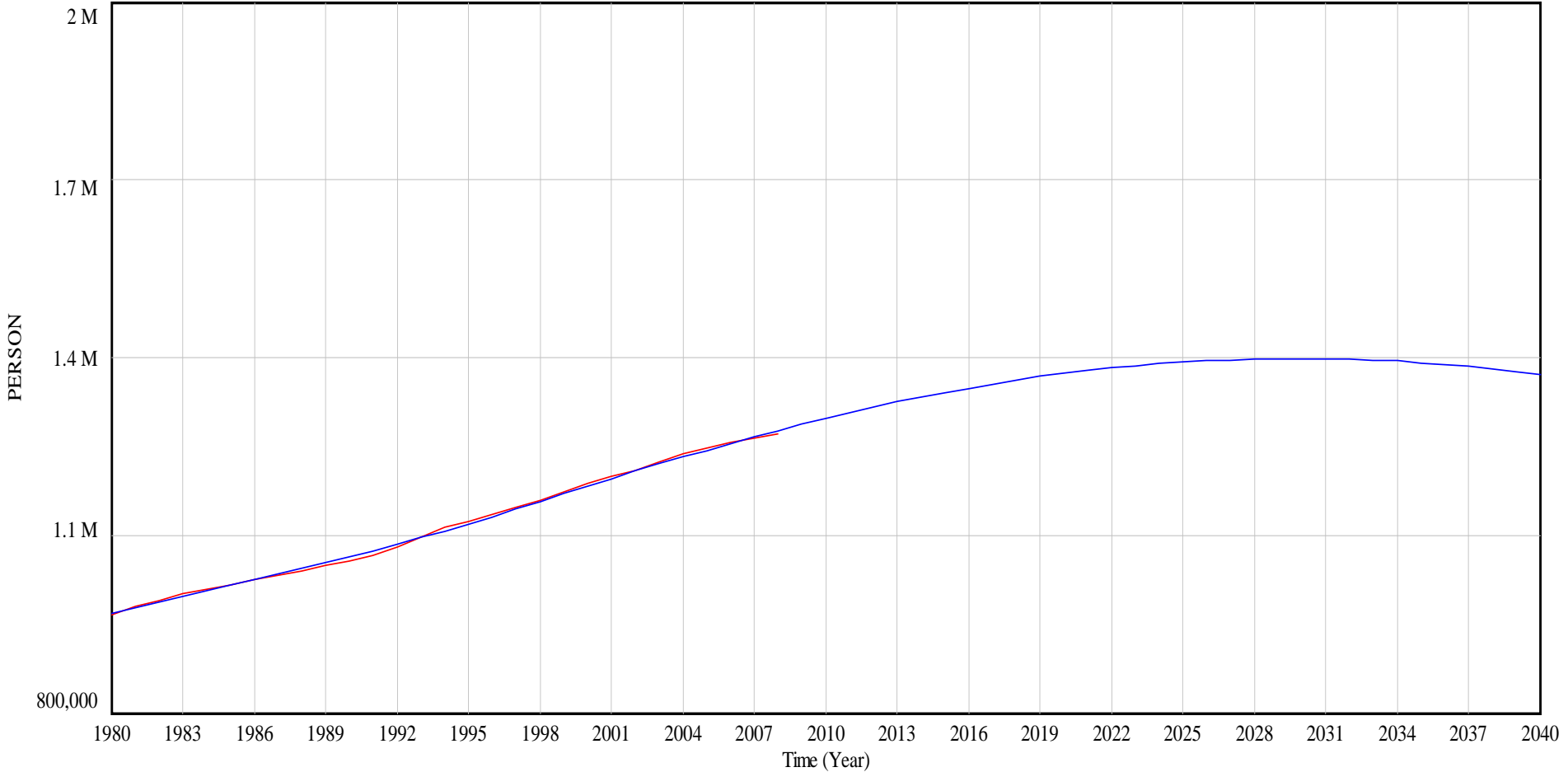
ENERGY in PRODUCTION FUNCTION

4

Some Preliminary Results

Population

total population

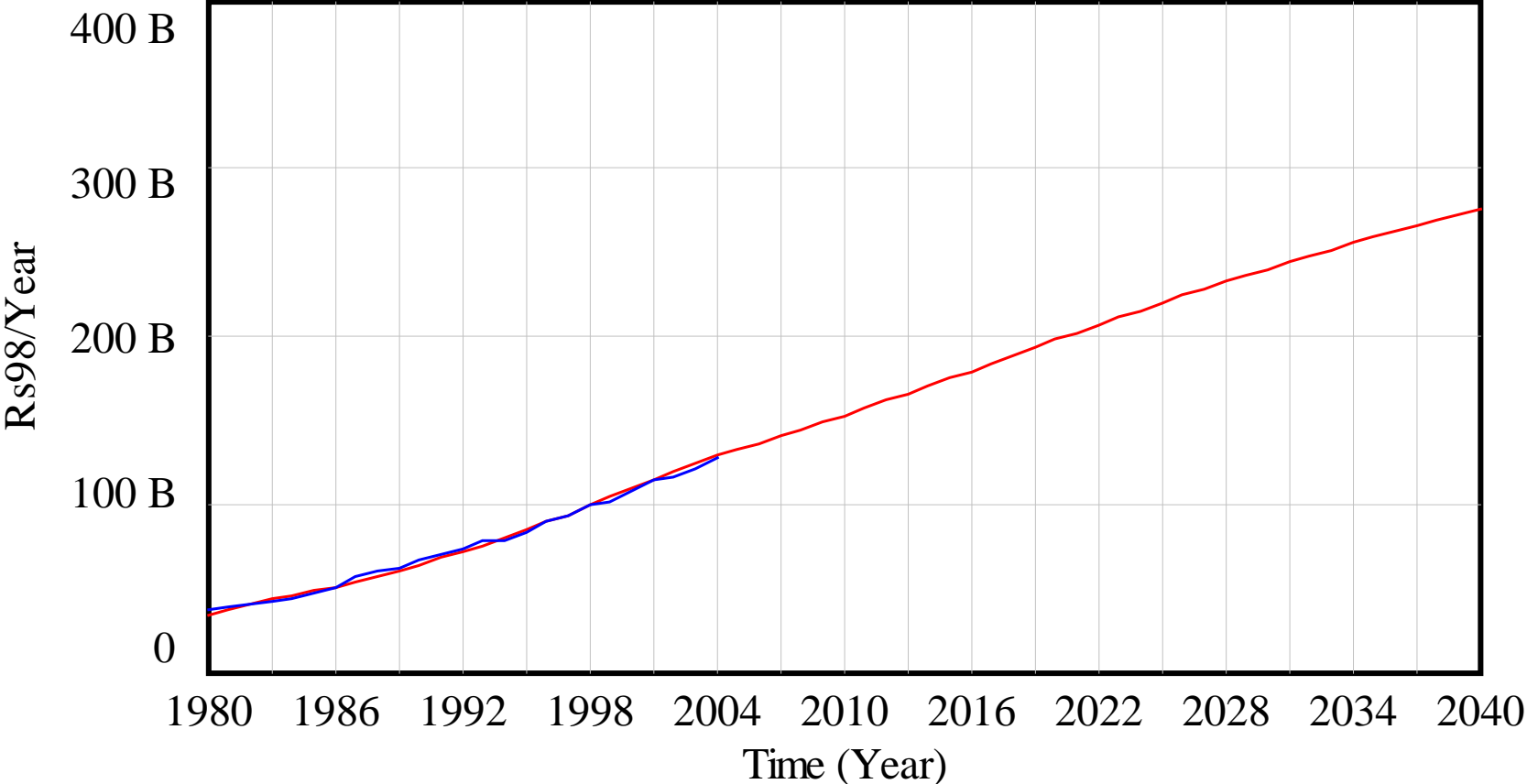


total population : Mauritius BAU

total population : Mauritius_Data

Real GDP

real gdp

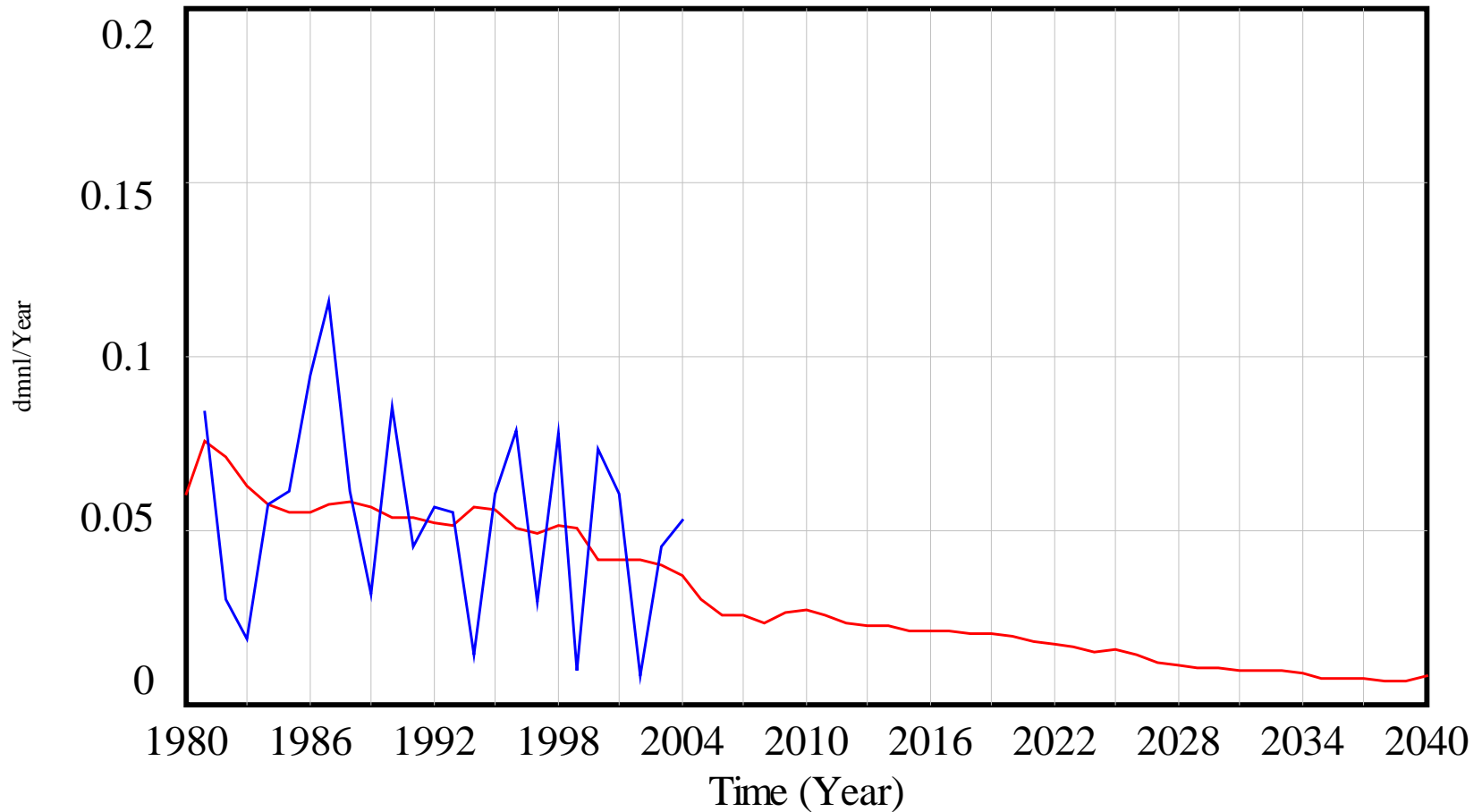


real gdp : Mauritius_Data - 18 August 2012

real gdp : Mauritius BAU

Real GDP growth rate

real gdp growth rate

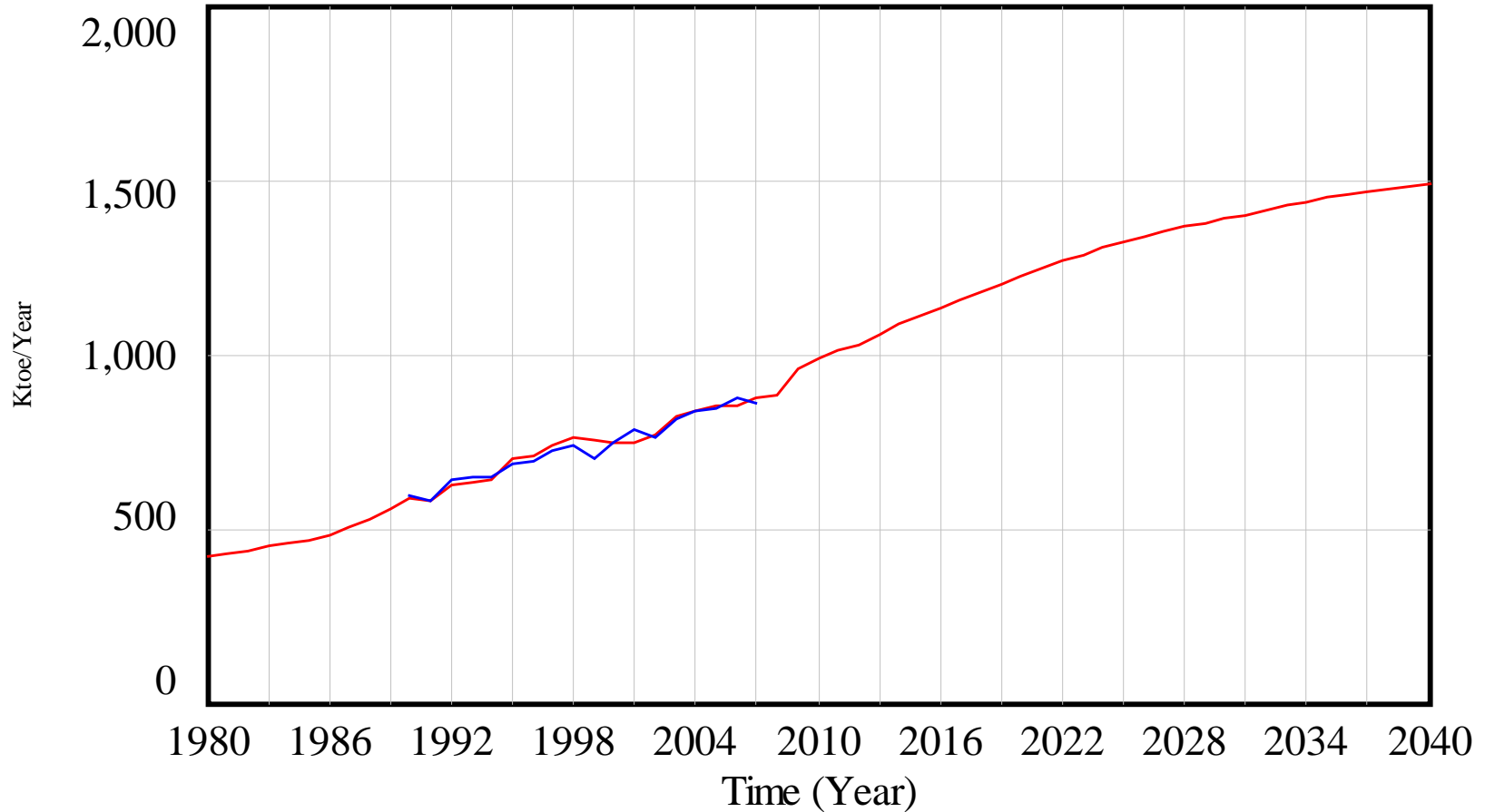


real gdp growth rate : Mauritius_Data - 18 August 2012

real gdp growth rate : Mauritius BAU

Total energy consumption (ktoe)

total energy consumption ktoe

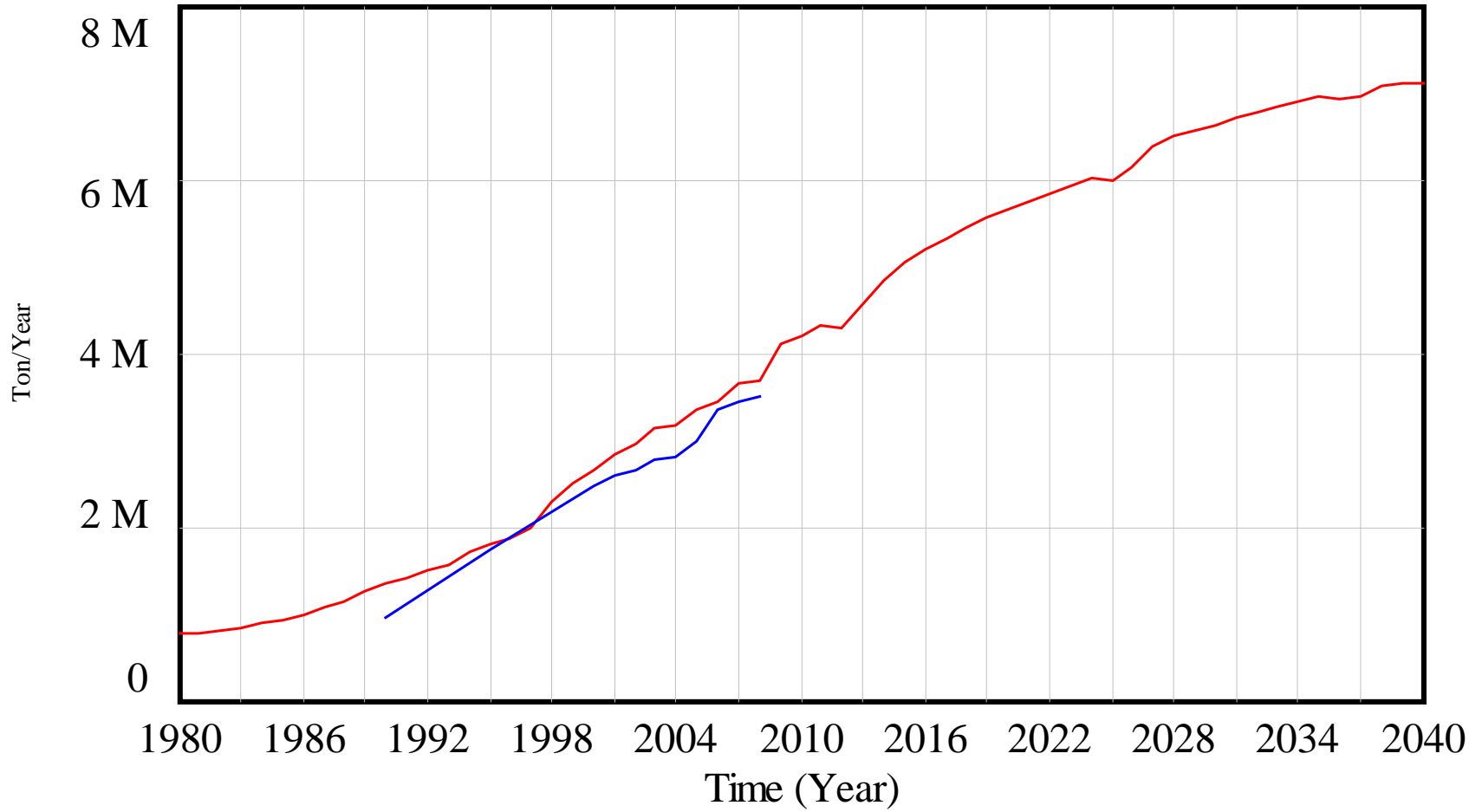


total energy consumption ktoe : Mauritius_Data - 18 August 2012

total energy consumption ktoe : Mauritius BAU

Total CO2 emissions (ton)

total co2 emissions



total co2 emissions : Mauritius_Data - 18 August 2012

total co2 emissions : Mauritius BAU



5 On the Way to NAMAs

Mauritius & NAMAs

Mauritius has not yet submitted NAMAs, but it has rather communicated officially to the UNFCCC that:

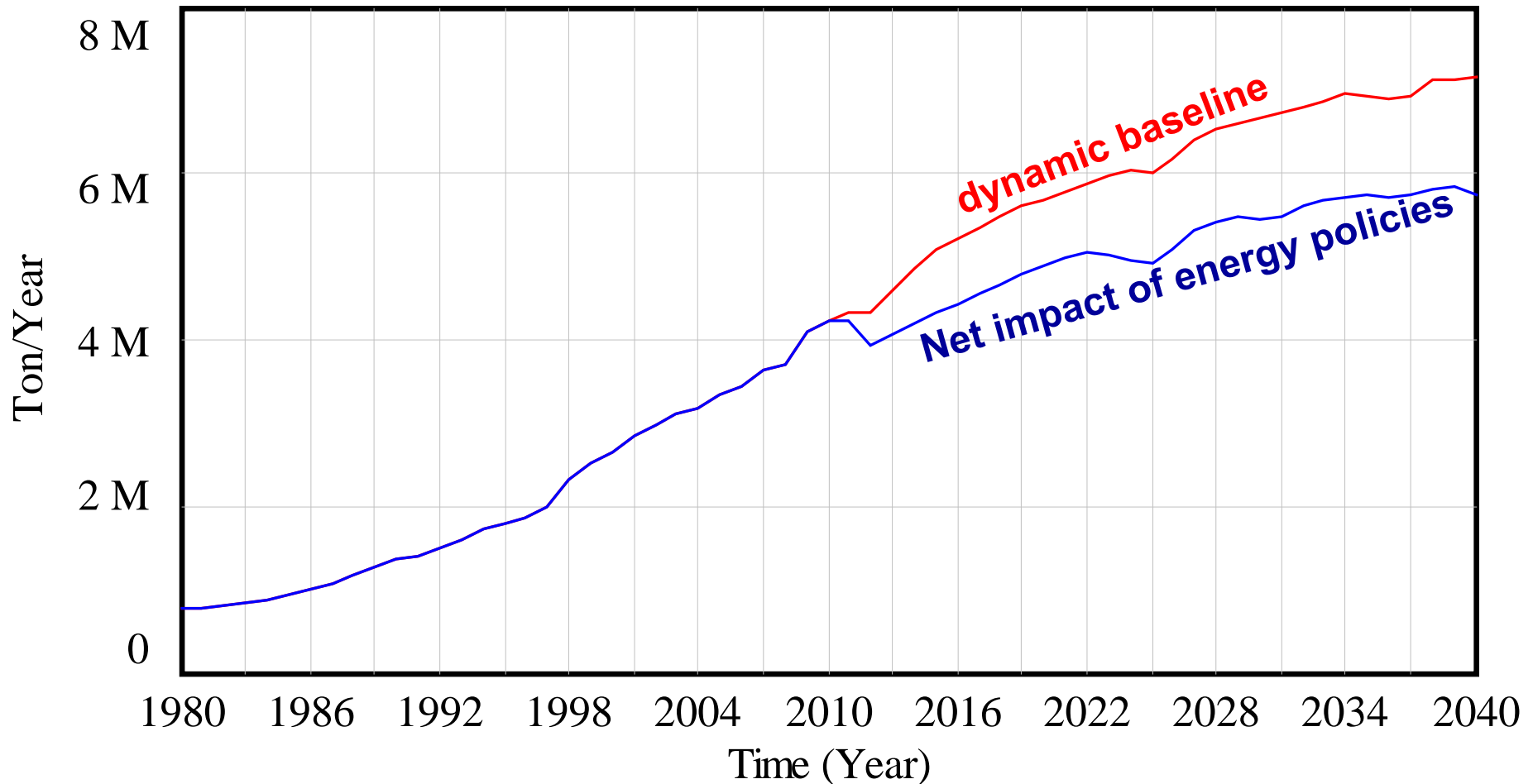
“90. Mauritius communicated that it has already embarked on a comprehensive Sustainable Development Programme as part of the “Maurice Ile Durable” initiative, which prioritizes renewable energy and energy efficiency.

91. Mauritius added that it intends to enhance mitigation efforts subject to the financial, technological and capacity-building support provided.”

Compilation of information on nationally appropriate mitigation actions to be implemented by Parties not included in Annex I to the Convention, Ad Hoc Working Group on Long-term Cooperative Action under the Convention, UNFCCC, Bonn, March 2011.

Total CO₂ Emissions (combustion of fossil fuels)

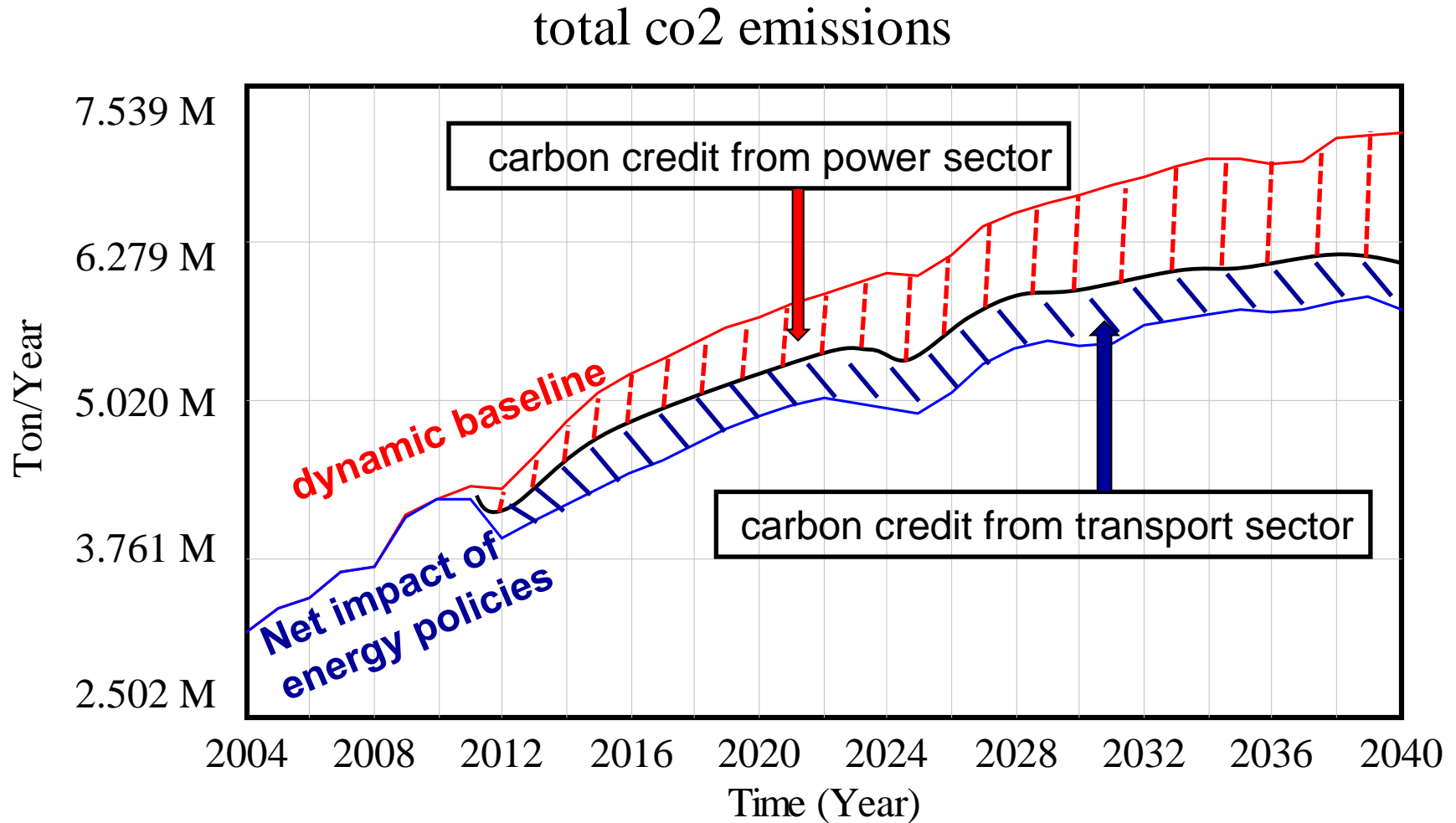
total co2 emissions



total co2 emissions : energy policy_d_GER_A

total co2 emissions : base_d_A

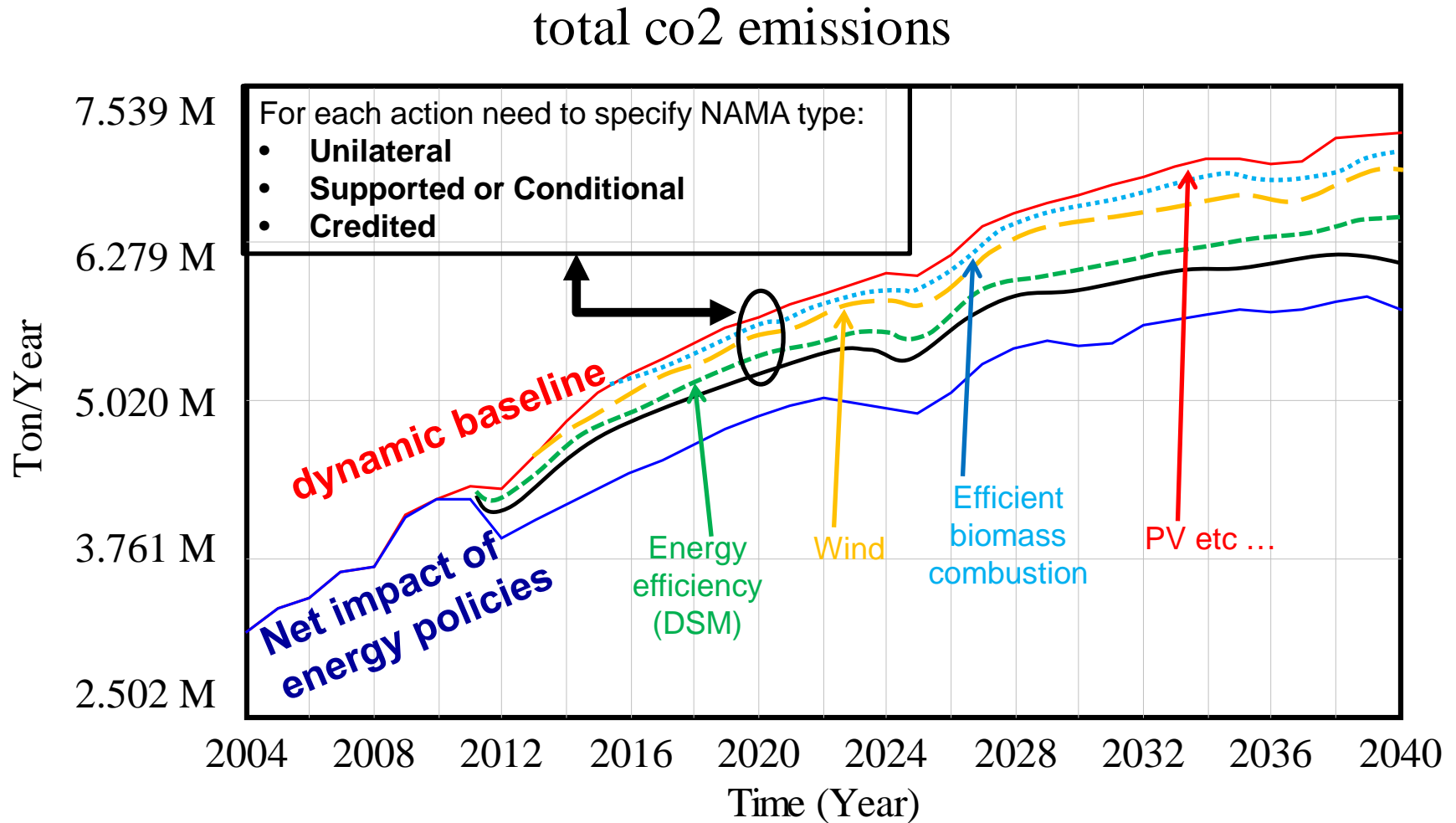
Sectoral Crediting under dynamic baselines



total co2 emissions : energy_policy_d_GER_A

total co2 emissions : base_d_A

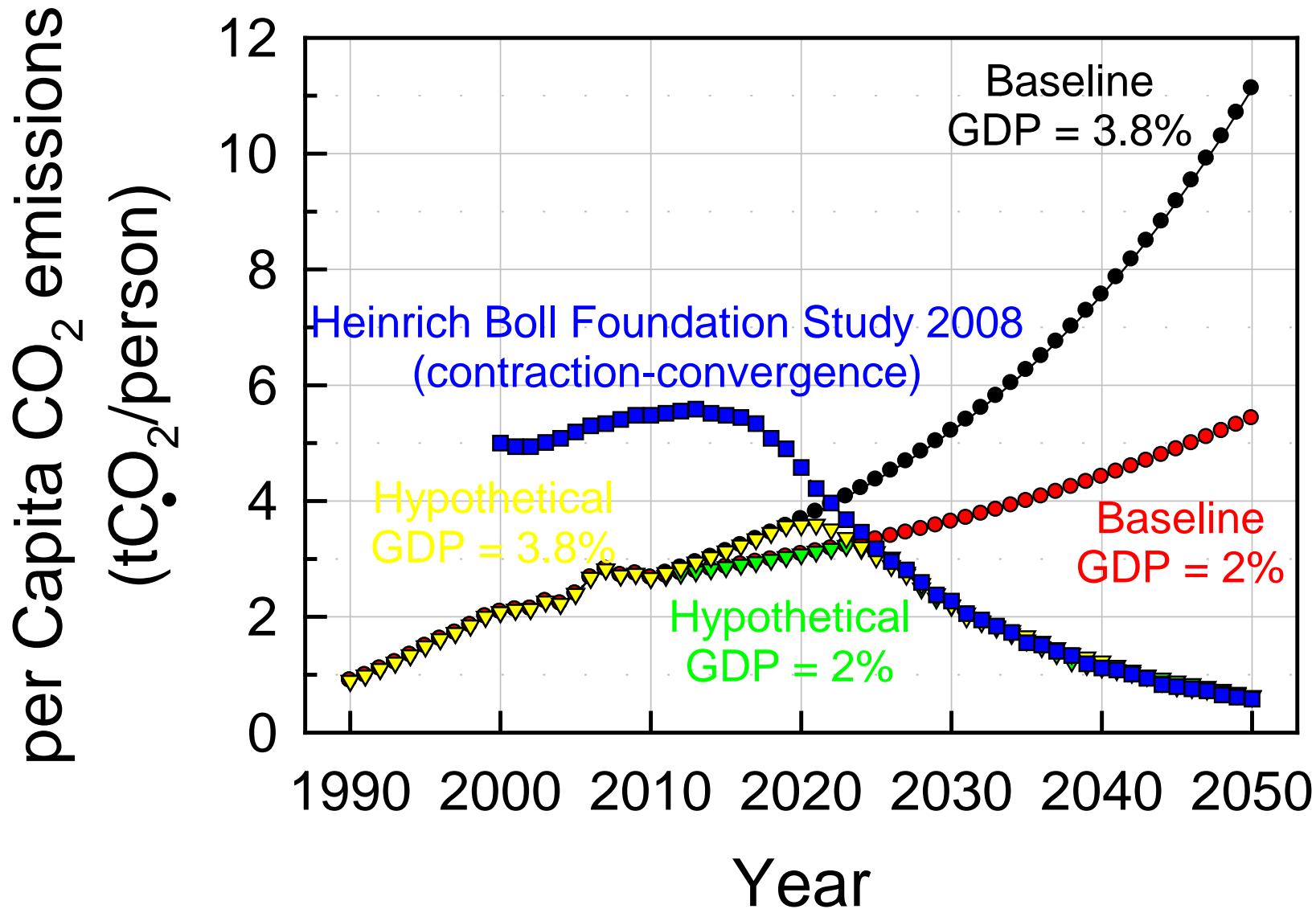
Classifying NAMAs



total co2 emissions : energy policy_d_GER_A

total co2 emissions : base_d_A

Energy Futures (low-carbon development pathways for stabilizing temperature rise to 2°C)



A background image of pink hibiscus flowers with yellow centers, partially obscured by a semi-transparent red banner.

ELIA – Ecological Living In Action

Thank You

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