

Energy Transformation and International Relations – The Cuban Case

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Overview

- Work in Progress
- Cuban energy transformation: Integration of renewable intermittent sources in the power system (IRIS)
- Data on energy in Cuba
- Energy Transformation and International Relations

IRIS

- The ‘Cuban Energy Transformation’ (IRIS) project develops new tools and methods for **planning the energy system**. The project concentrates on aspects related to the **integration of intermittent renewable energy sources**, mainly wind and solar, in the Cuban electricity system and the problems and advantages related to it.
- The target is to develop renewable energy scenarios which take into account the global development context and the political, economic, social, technological, environmental and cultural (PESTEC) dimensions of development.
- The project looks at the interlinkages of these different aspects in the context of the transformation processes taking place in Cuba.

IRIS

- Development of the local research capacity in participating Cuban universities and research centres is one target.
- Dissemination and utilization of the research results will take place via stakeholder workshops and the active contacts of the partner institutions to Cuban ministries and other organisations.
- 1.1.2019-31.12.2022
- Linkages to other projects including research, staff exchange and cooperation in Ph.D. supervision (ERASMUS+)
- EU and Finnish financing

Partners

University of Turku (UTU), Finland Futures Research Centre (FFRC), and the Tampere University;

together with

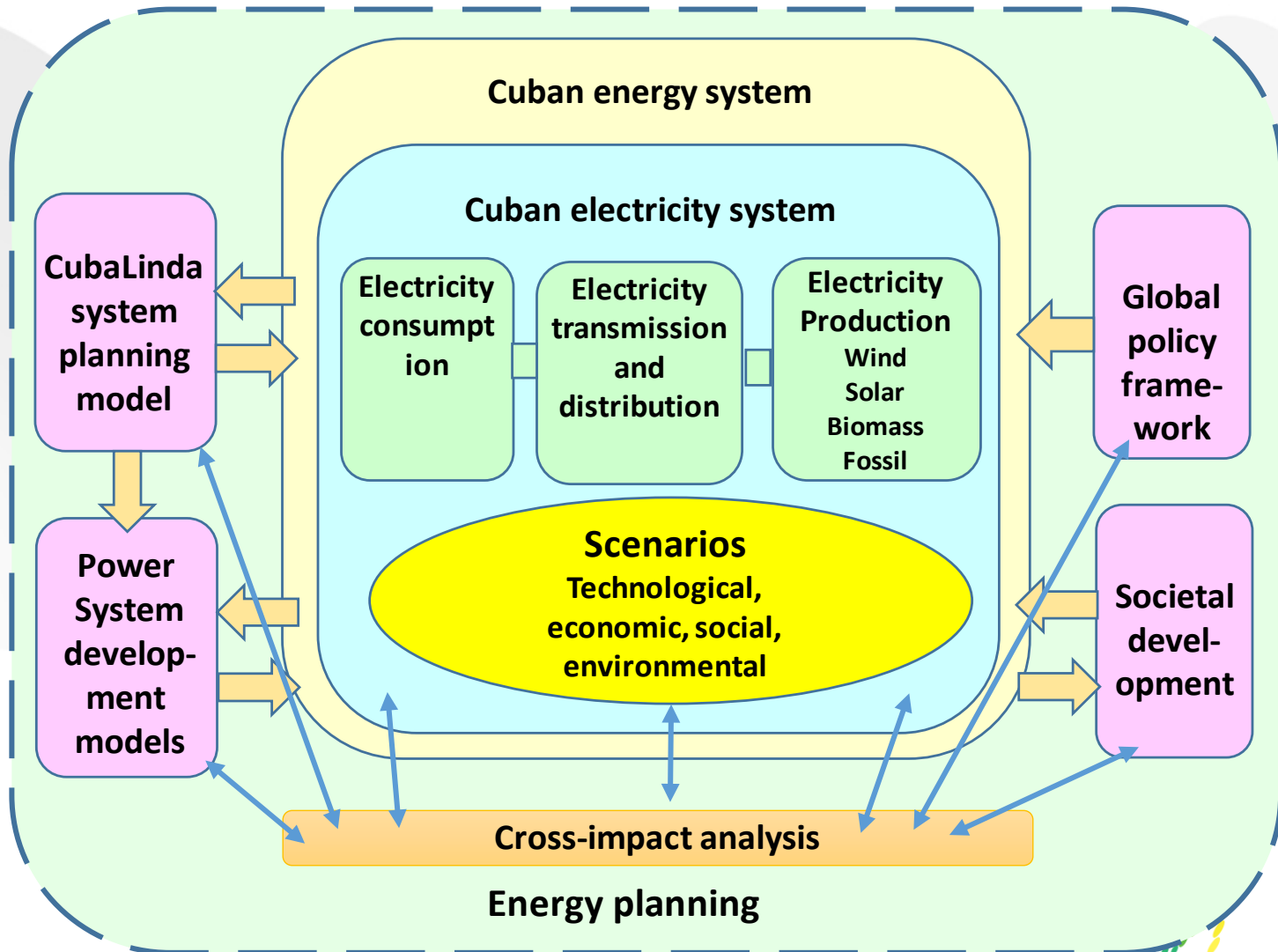
- Universidad de Oriente, Santiago de Cuba;
- Technological University of Havana, CUJAE;
- CubaEnergia;
- CIES (Centro de Investigacion de Energia Solar, Cuba)
- (Higher Institute of Mining and Metallurgy, Moa, Cuba)



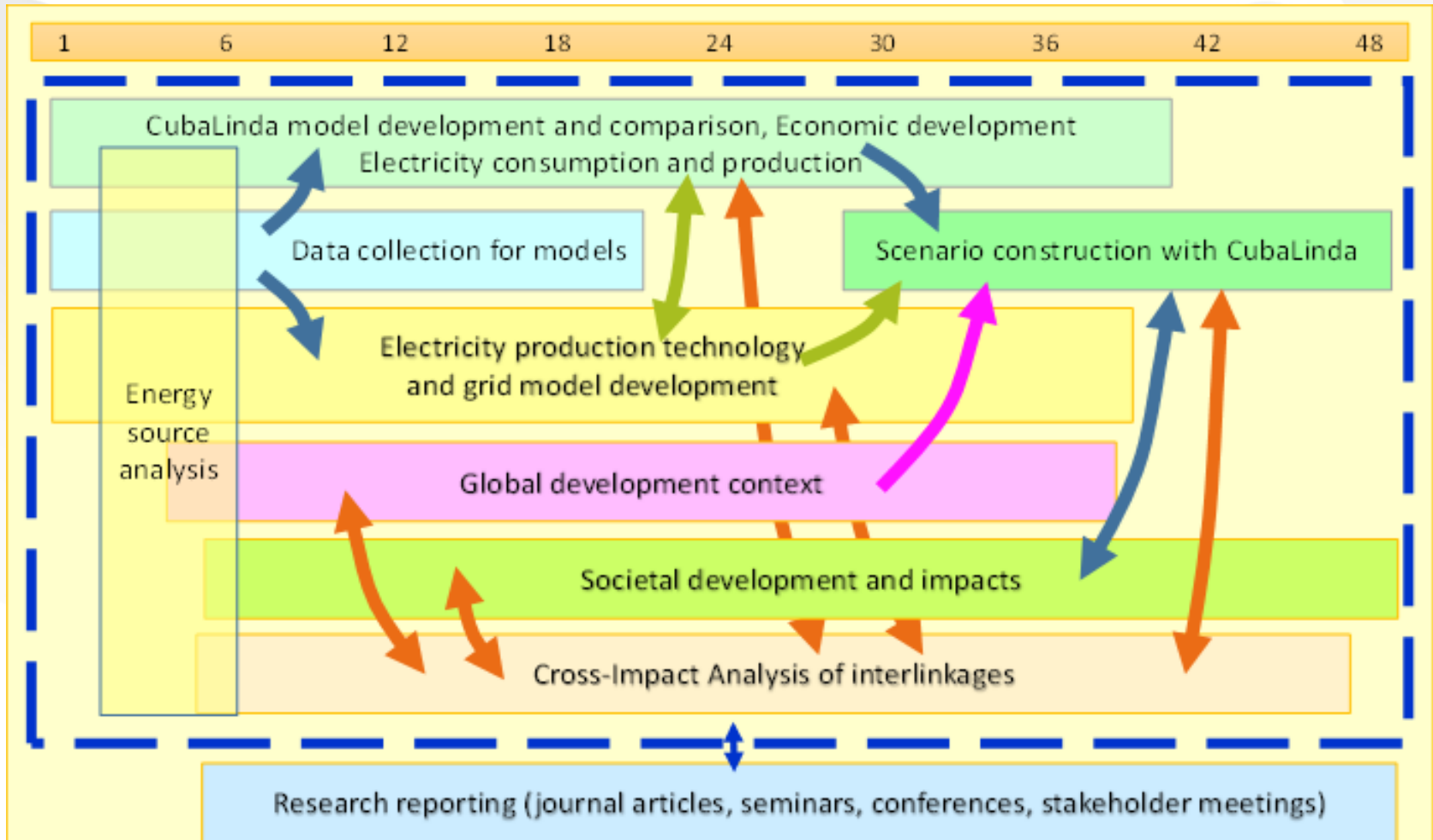
Objectives

- Develop a scenario construction tool for Cuban future energy development analysis and scenario building (CubaLinda) and carry out comparison with other international energy planning models.
- Develop planning tools for integration of intermittent renewable energy sources (wind, solar, biomass) in the Cuban electricity system
- Develop planning tools for grid development in Cuba in order to be able to integrate the distributed intermittent renewable energy sources in the system
- Develop future scenarios for Cuban energy system and the related societal impacts in the context of global development
- Carry out cross-impact analysis of interlinkages of Cuban energy system in the context of PESTEC framework
- Develop the research capacity in the participating Cuban institutions

General framework for research

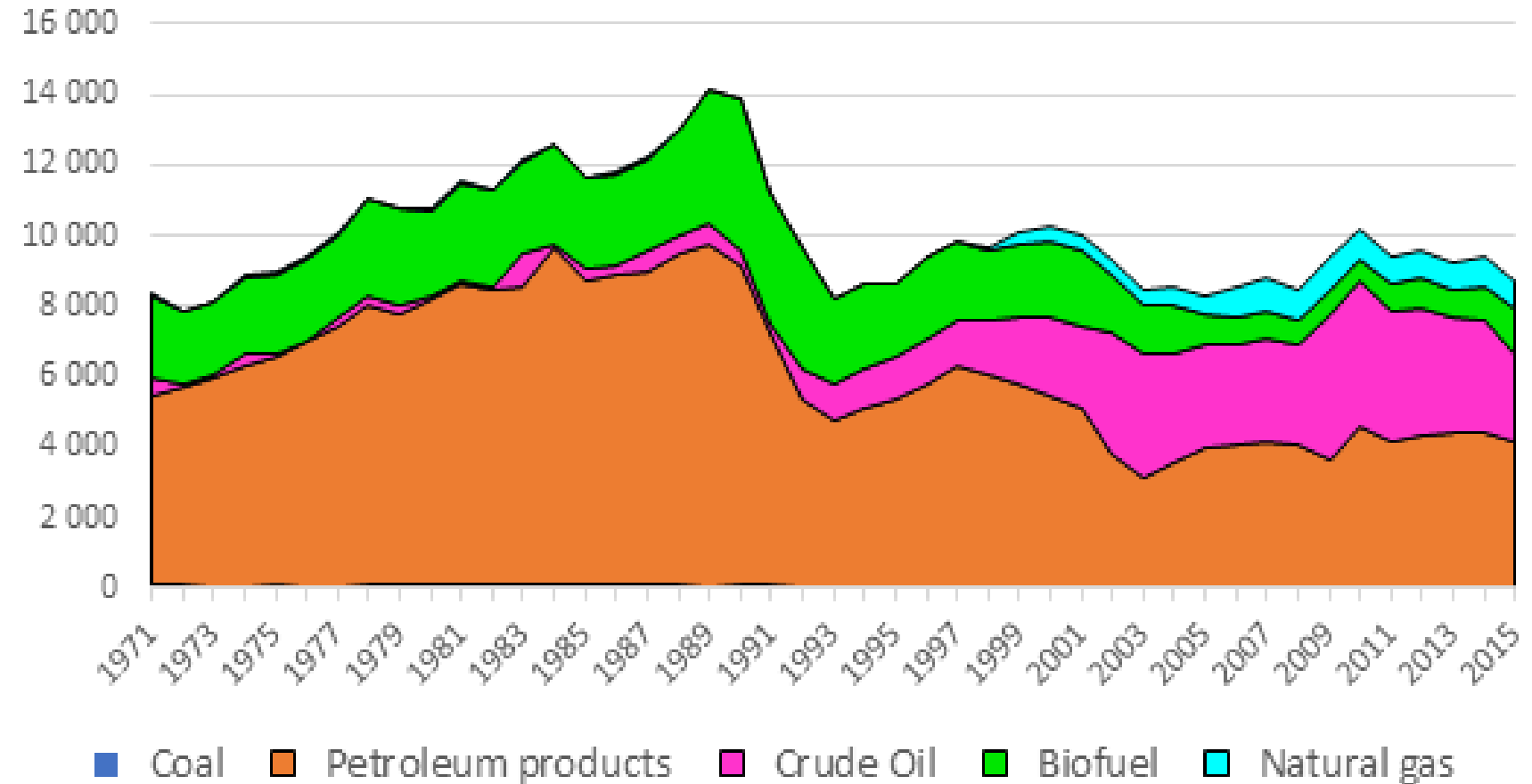


Schedule for the research

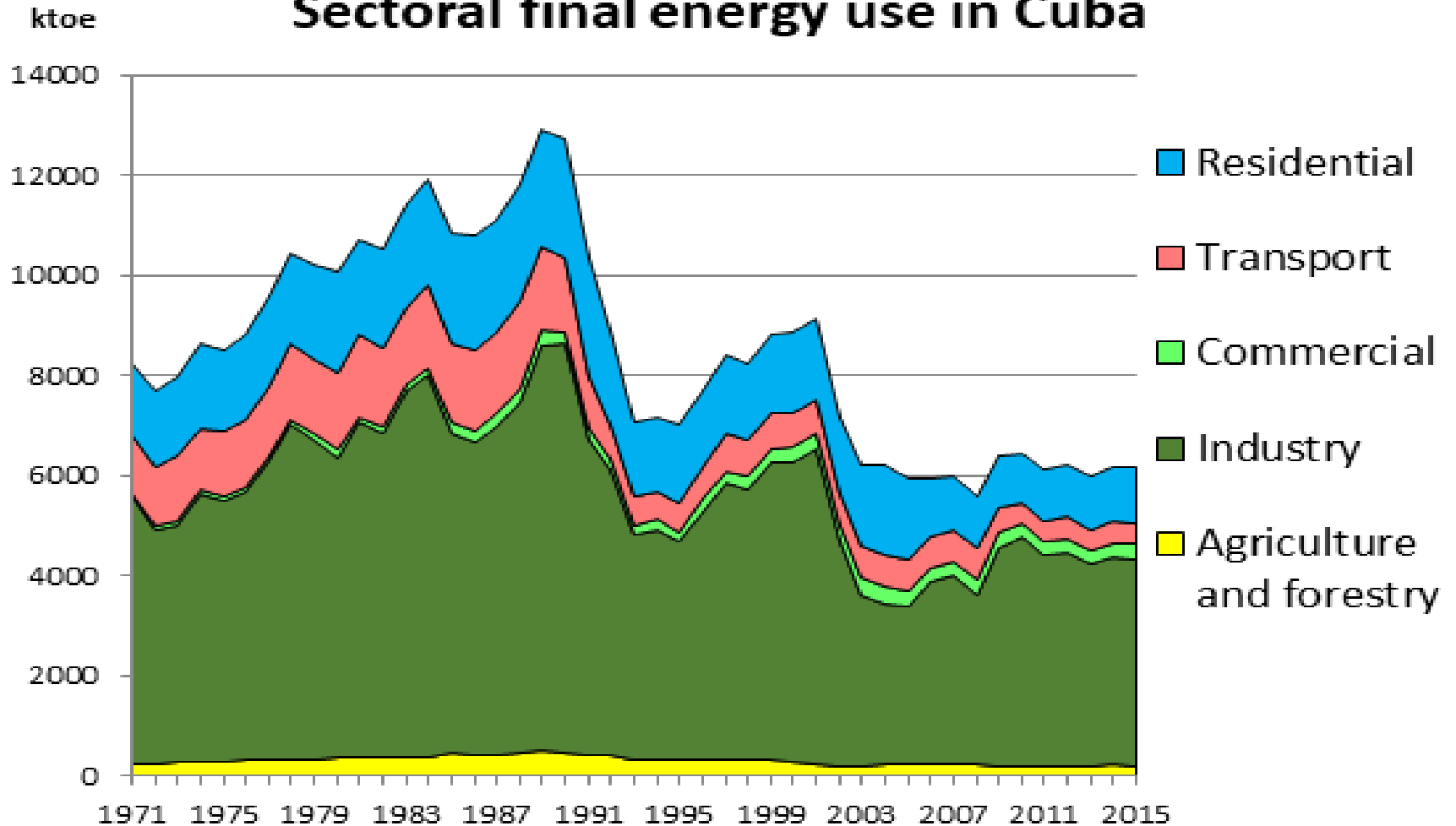


Fuel use in Cuba

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Sectoral final energy use in Cuba



Value added (GDP) in Cuba

Mill. USD

70 000

60 000

50 000

40 000

30 000

20 000

10 000

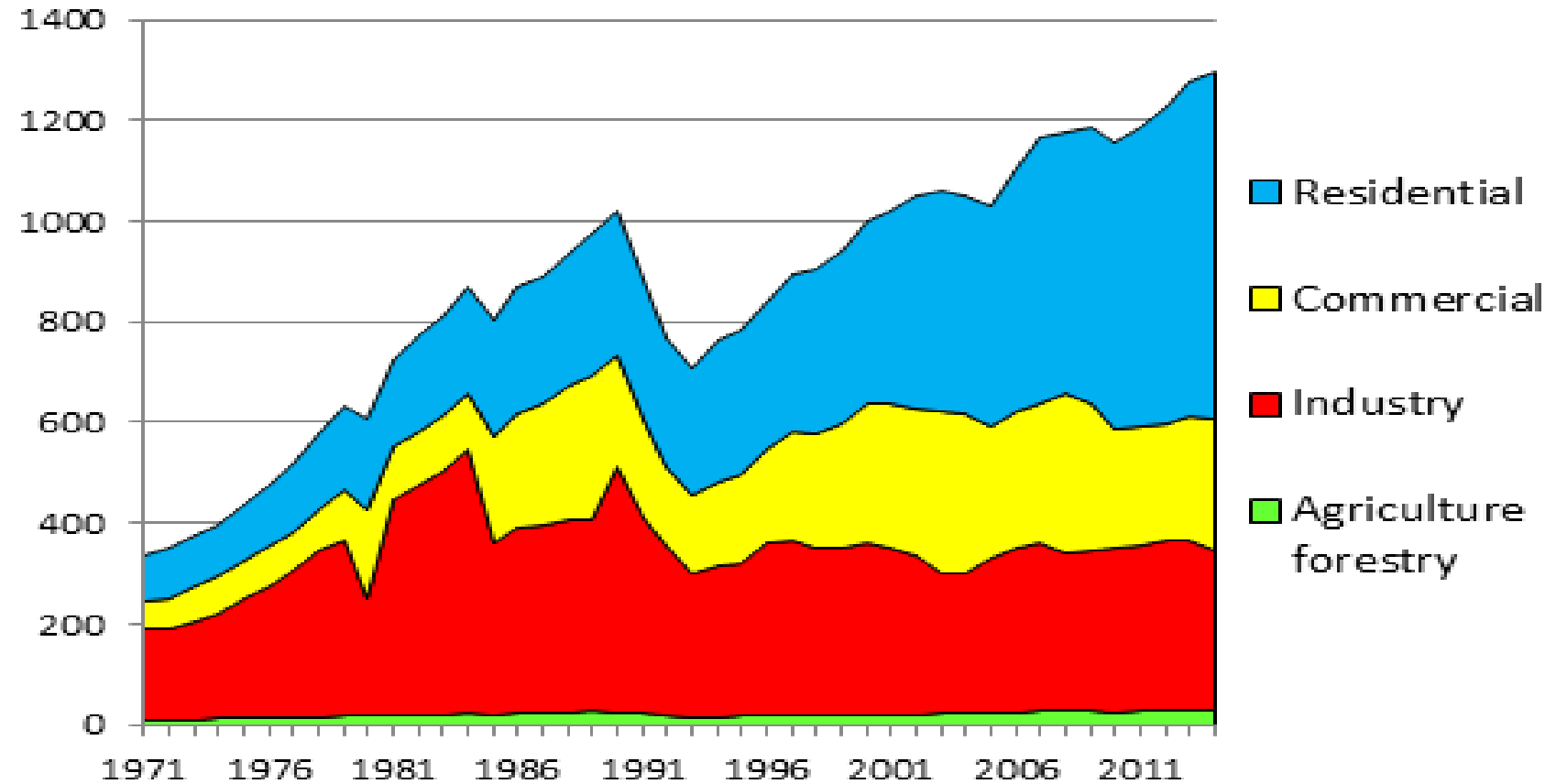
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1971 1975 1979 1983 1987 1991 1995 1999 2003 2007 2011 2015



Electricity consumption in different sectors in Cuba

ktoe



The International Dimension of any Economic Performance in Cuba

- Cuba is since 60 years one of the countries following politically, socially and economically its own development path (the Cuban revolution had from the very beginning in 1953 a specific "anti-us" aspects)
- Embargo/boycott/sanctions of the USA (and de facto many allied!) and international companies (Kennedy 1960 - Torricelli Act 1992 - Helms-Burton Act 1996 – Trump 2019)
- Outside of the "normal" global world market relations
- Cuba was in deep economic crisis after 1989/90 due to the collapse of the Soviet Union and the *Council for Mutual Economic Assistance (CMEA or Comecon)*

The International Dimension of any Economic Performance in Cuba

- Continuing since the 1990s the socialist path with new allies with Venezuela in a central role – also as a provider of oil.
- 2017/18/19: political reforms and new constitution. "Post-Castro" modernizations and opening: foreign capital investments, increasing liberalization of market mechanisms, black market/grey market toleration unlimited internet access for all citizens , two currency policy, personal bank account in euro etc.
- A new Cuban model? Democratization? Adaptation? Survival strategy?
- Future role of Trump's US? (See also developments in Venezuela)
- New factors affecting future outlook for Cuba.



The International Dimension of any Economic Performance in Cuba

- Serious energy crisis in 2019 – rough consequences for economy and population.
- Current political and economic situation results in the need to provide any energy sources. A shift to renewables has become a secondary issue.
- Obviously, the research design of the IRIS project needs reformulations and adaptations...

- Thank you for your interest and patience!