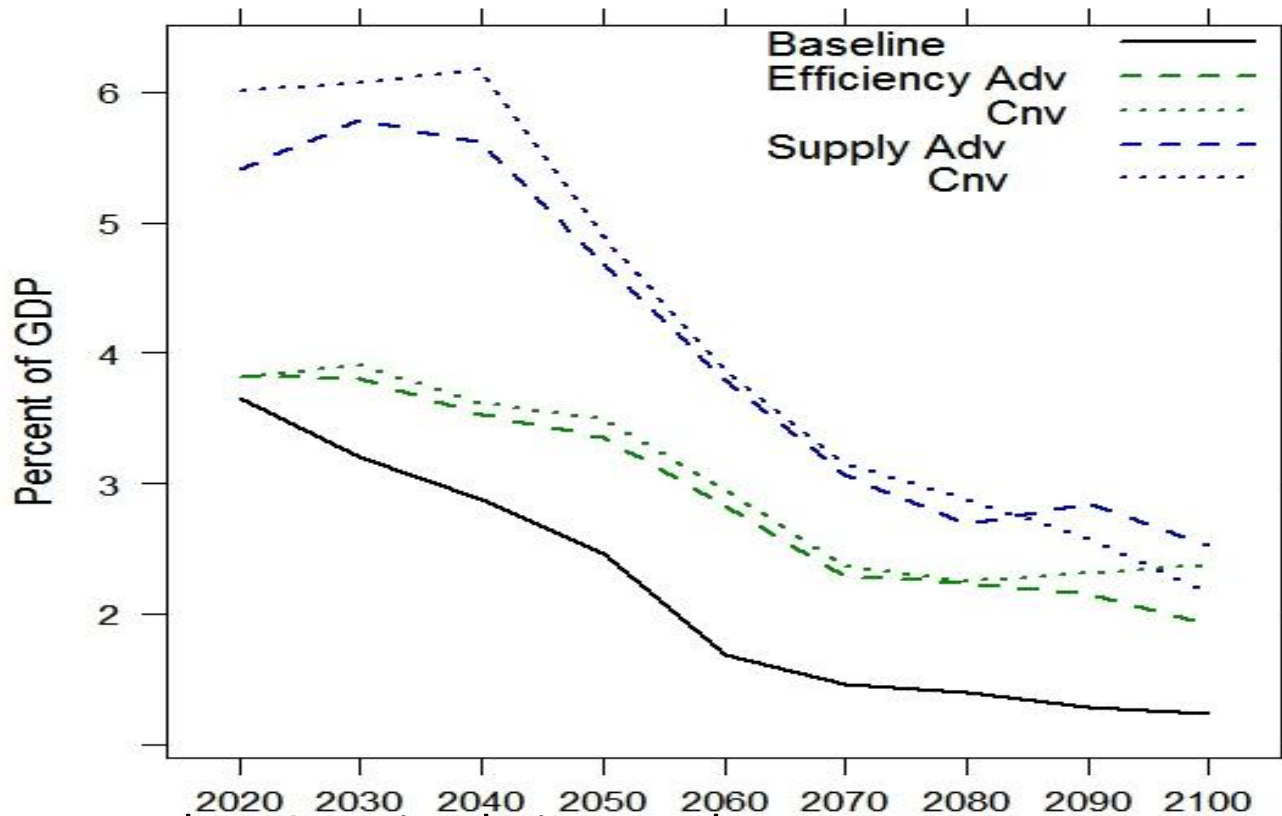# The challenge of sustainable development

UN-DESA
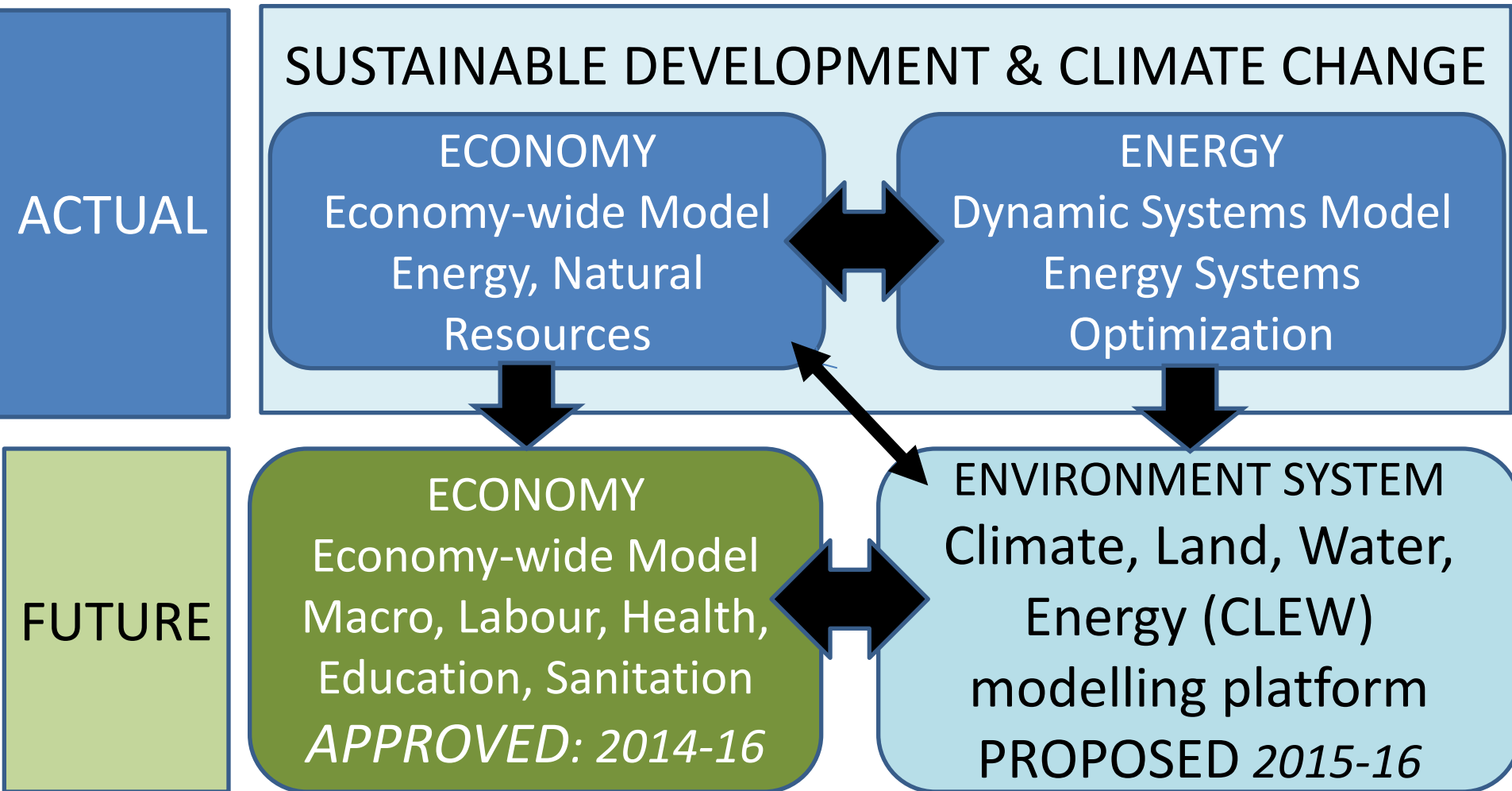
Investment in energy in Africa (South of Sahara) by policy and transport

Why an energy systems tool? 2030 Agenda is… transformative. Transforming the energy matrix. But what does it take? How should countries do it?

Based on GEA simulation results

SUPPORTING ANALYTICAL CAPACITY FOR SUSTAINABLE DEVELOPMENT MEDIUM-TERM VISION

ACTUAL

SUSTAINABLE DEVELOPMENT & CLIMATE CHANGE

ECONOMY
Economy-wide Model
Energy, Natural Resources

ENERGY
Dynamic Systems Model
Energy Systems Optimization

FUTURE

ECONOMY
Economy-wide Model
Macro, Labour, Health, Education, Sanitation
APPROVED: 2014-16

ENVIRONMENT SYSTEM
Climate, Land, Water, Energy (CLEW) modelling platform
PROPOSED *2015-16*

Genealogía de Modelos

SUSTAINABLE DEVELOPMENT ANALYTICAL TEAM

ANALYSIS: 20-30

ECONOMIC MODEL: 6-10

ENERGY MODEL: 6-10

INTEGRATED MODEL: 4-8
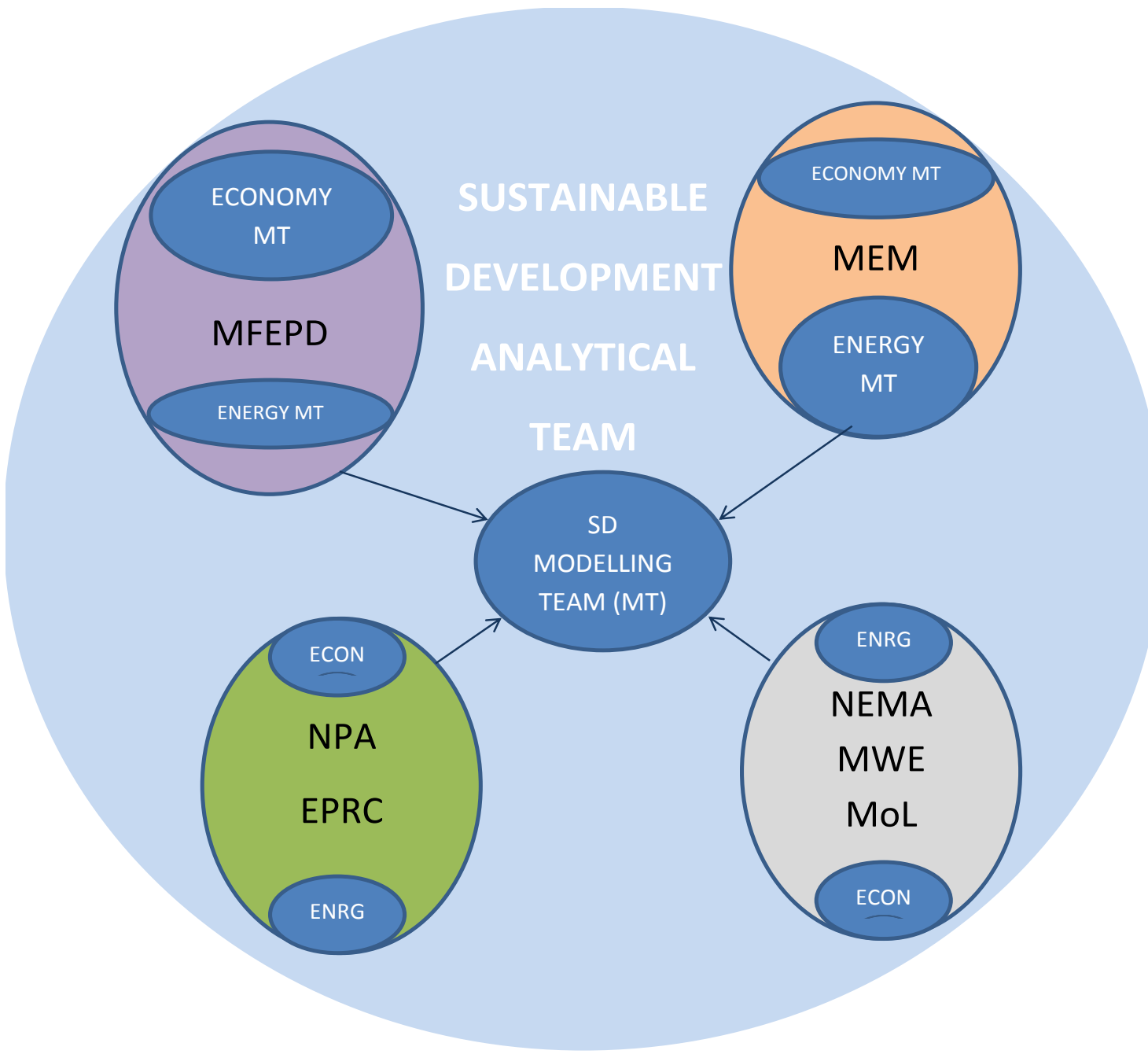
ENERGY DYNAMIC SYSTEMS MODEL

WEEK I

INTRODUCTION

LINEAR PROGRAMMING

MODELLING PHYSICAL SYSTEMS

BASIC

OSEMOSYS MODEL ELECTRICITY

-DESIGNING SIMULATIONS
-RUNNING SIMULATIONS
-INTERPRETING RESULTS

WORK AT DISTANCE

WEEK II

BASIC

OSEMOSYS MODEL

ENERGY SYSTEM

-DESIGNING SIMULATIONS

-RUNNING SIMULATIONS

-INTERPRETING RESULTS

-WRITING REPORTS BASED ON MODELLING

WORK AT DISTANCE

WEEK III

INTERMEDIATE

OSEMOSYS MODEL ENERGY SYSTEM

UNDERSTANDING POLICY INSIGHTS FROM ENERGY SYSTEMS MODELLING

Drafting policy notes

WORKSHOP

POLICY DISCUSSION & DISSEMINATION

We are concluding a pilot phase

- Countries:
  - Bolivia, Gas rich country
  - Nicaragua, reliant on fossil fuels, moving into hydro
  - Uganda, recently developed hydro and left behind dependence on (imported) fossil fuels

Results and scenarios

- Countries had done some modelling years ago, but very little own capacity
- Energy balances produced based on accounting exercises in need of improvement
- Energy plans based on project estimates and demand assessments
- Modelling first produced a medium to long term optimized investment and generation plan: the baseline

Scenarios being designed & implemented

- Demand efficiency policies (e.g. energy saving life bulbs, and efficiency targets based on awareness campaigns)

- Plans to expand hydro

- Plans to expand solar and wind technologies

- Plans to expand geothermal

- Preliminary plans to build nuclear generation plants

- Ambitious plans to export of electricity

- Climate change (availability of water): costs, technology changes, optimum energy mix.
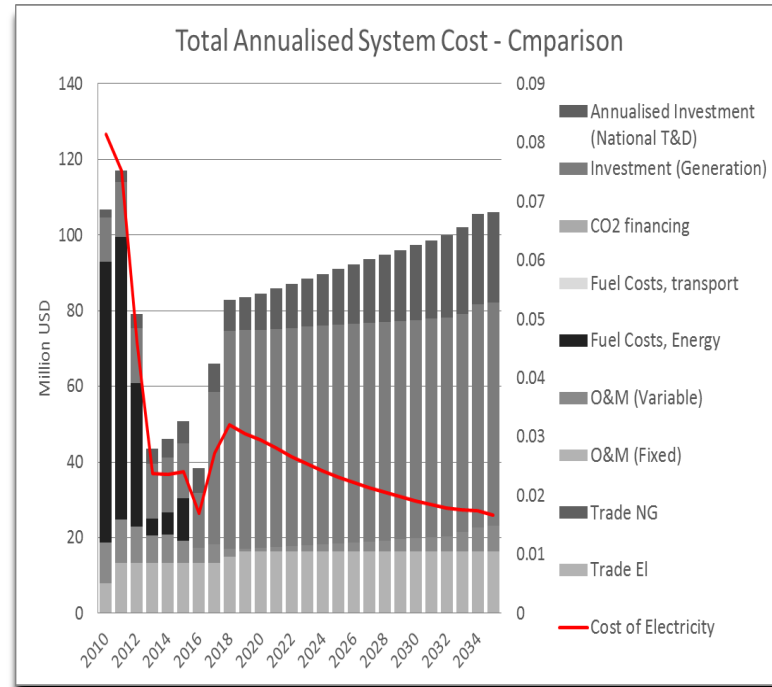
Total Annualised System Cost - Cmparison

Lessons

- Closely links to policy decision makers and directors of technical/planning teams
- Use available capacity and flexibly respond to capacity building demands, even if not considered within the initial scope to the project
- Reinforce work on policy notes & reports & dissemination
  - It is not an easy task to build a team of modelling analysts that can produce insightful policy outcomes (notes, briefs, reports)
  - But, it can be done
  - And it is worth doing it
- Inter-institutional teams help to establish a common language that facilitates policy dialogue

THANKS