

Global Energy Assessment

Toward a Sustainable Future



- Austrian Development Agency (ADA)
- Climate Works Foundation
- Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
- First Solar Inc.
- Global Environment Facility (GEF) through UNIDO
- Italian Ministry for the Environment and Territory
- Petrobras
- Research Council of Norway
- Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)
- Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) and
- Swedish Energy Agency
- United Nations Development Programme (UNDP)
- United Nations Environment Programme (UNEP)
- United Nations Foundation (UNF)
- United Nations Industrial Development Organization (UNIDO)
- US Environmental Protection Agency (US EPA)
- US Department of Energy (DOE) through Global Environment and Technology Foundation
- World Bank/ESMAP
- World Energy Council (WEC)

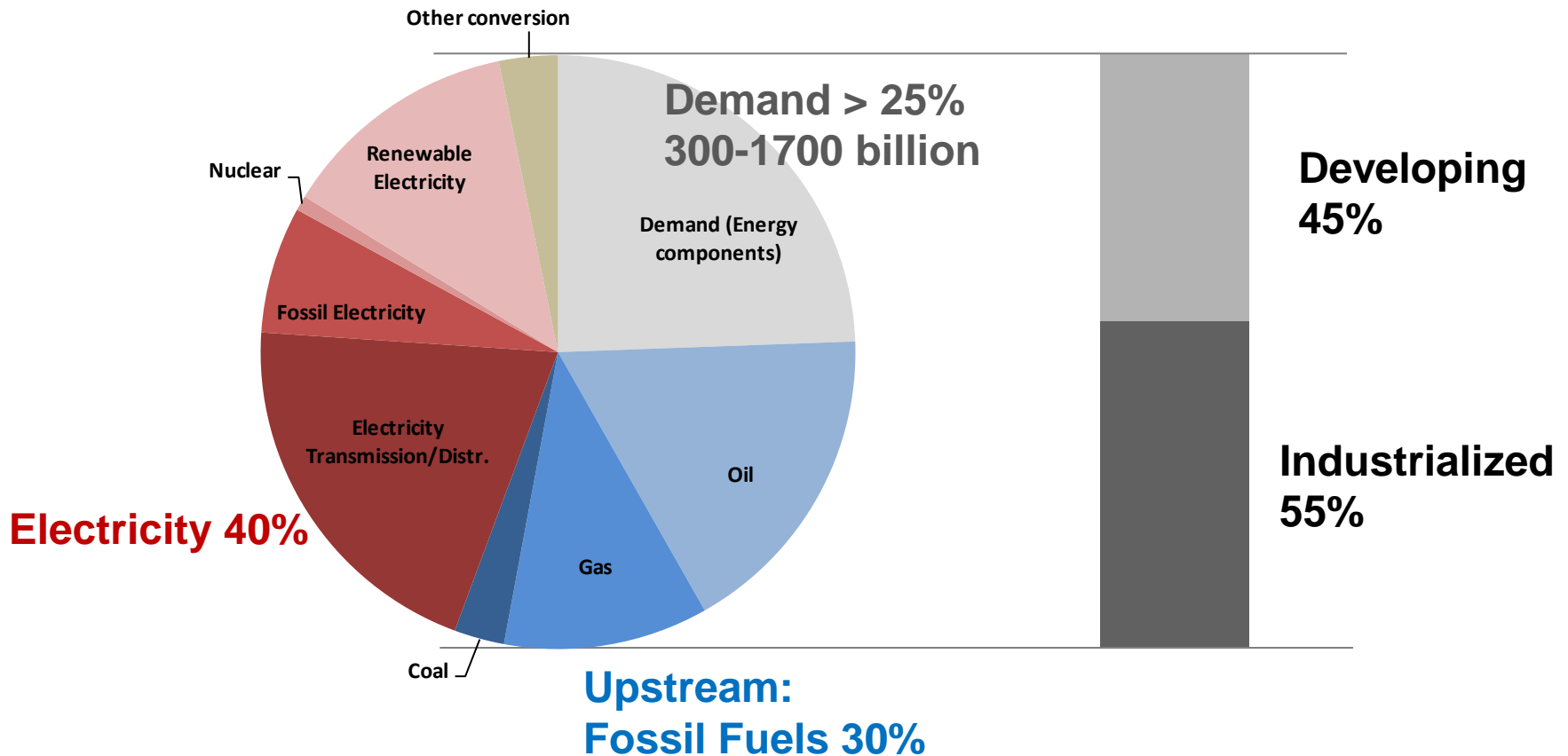
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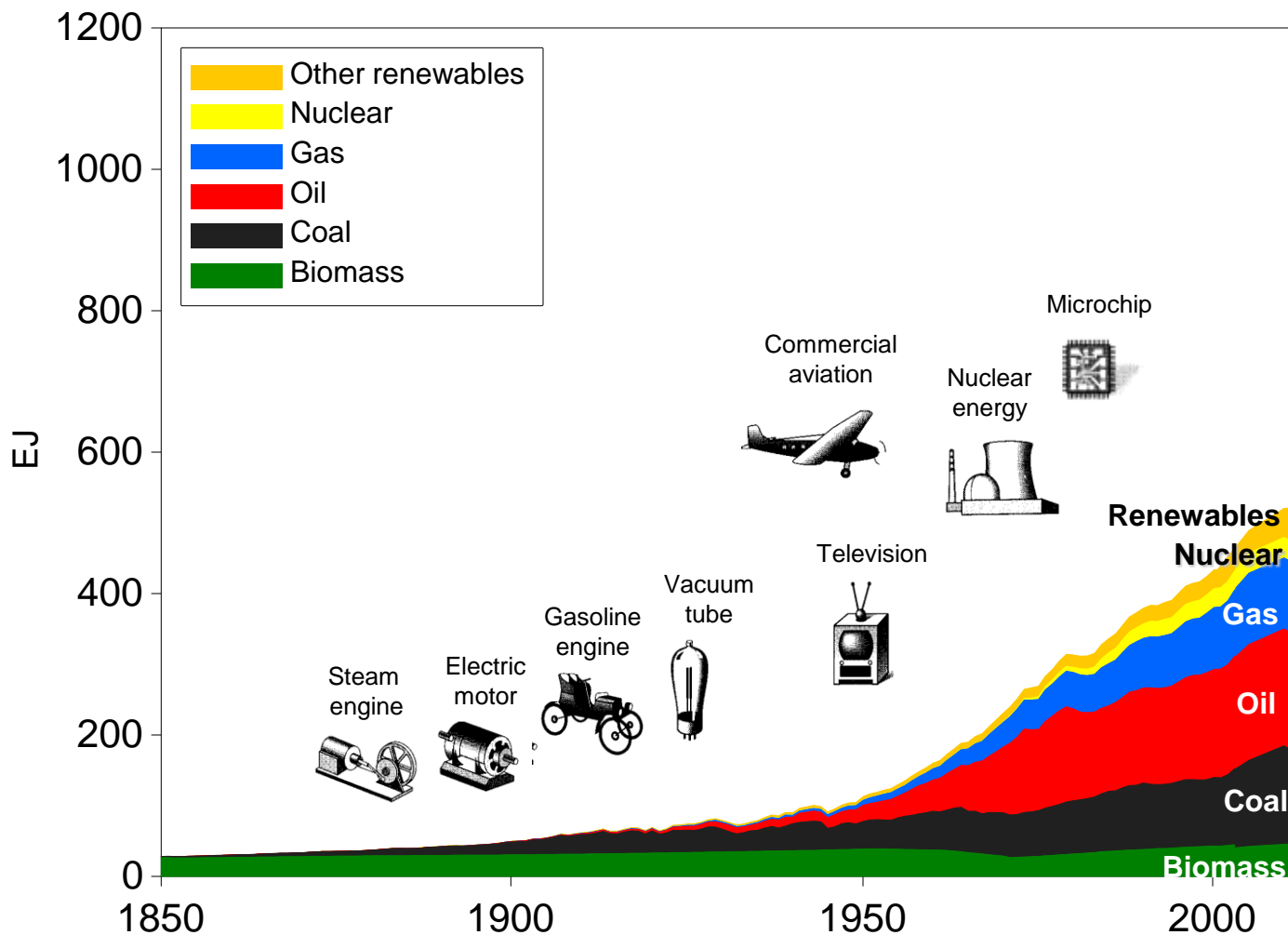
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- **Abeeku Brew-Hammond** – Kwame Nkrumah Univ. of Science & Tech.; *Ghana (Ch19: Energy Access for Development)*
- **Shonali Pachauri** – IIASA; *India (Ch19: Energy Access for Development)*
- **Suani T. Coelho** – CENBIO-Brazilian Reference Center on Biomass; *Brazil (Ch20: Land and Water: Linkages to Bioenergy)*
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- **Mark Jaccard** – Simon Fraser Univ.; *Canada (Ch22: Policies for Energy System Transformations: Objectives and Instruments)*
- **Daniel Bouille** – Bariloche Foundation; *Argentina (Ch23: Policies for Energy Access)*
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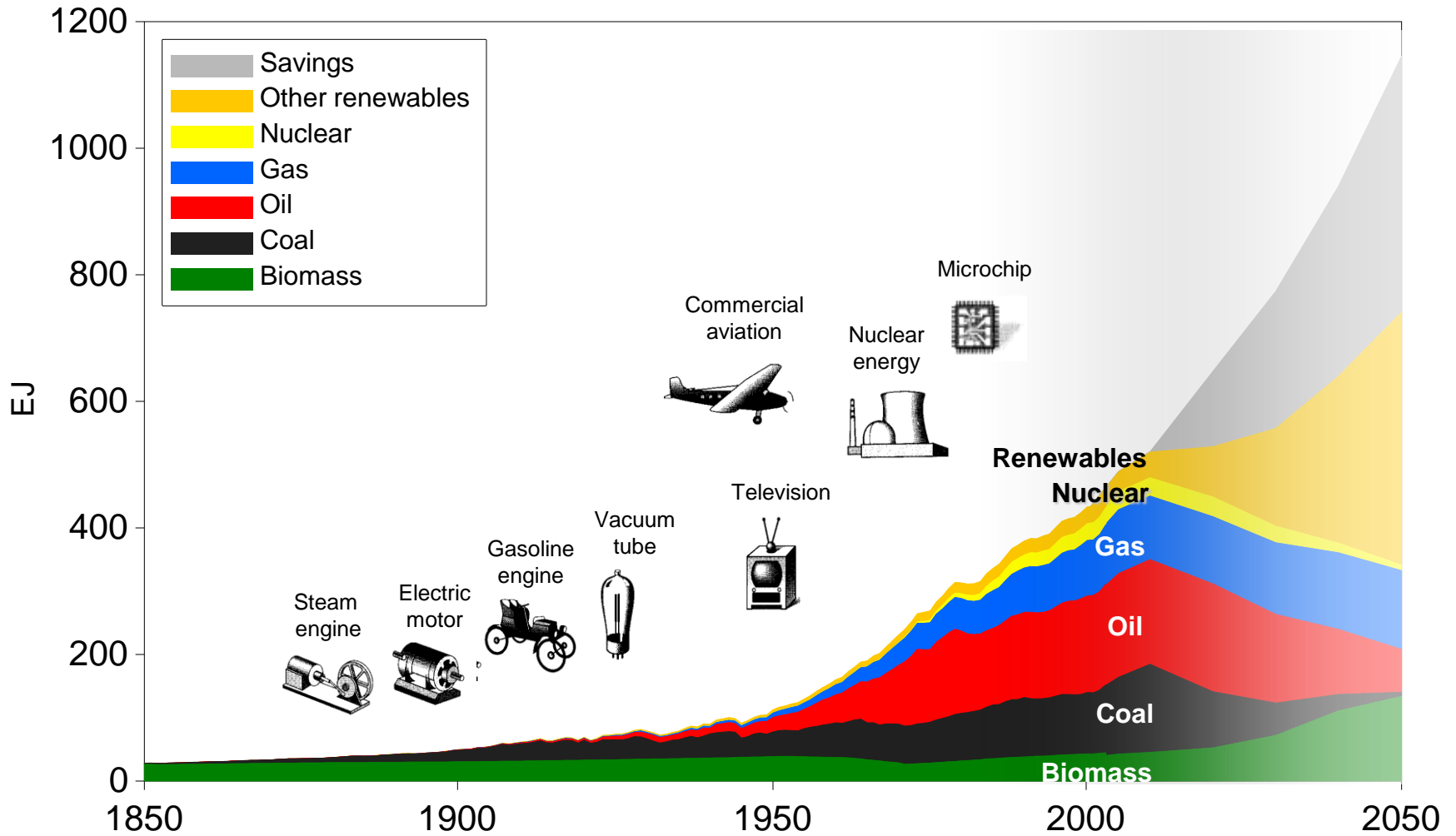
Major transformations are required if future energy systems are to be affordable, safe, secure, and environmentally sound. There is an urgent need for a sustained and comprehensive strategy to help resolve the following challenges:

- ➔ Providing clean and affordable energy services for all;
- ➔ Increasing energy security for all nations, regions, and communities;
- ➔ Reducing GHG emissions to limit global warming to less than 2° C above pre-industrial levels;
- ➔ Reducing indoor and outdoor air pollution from fuel combustion and its impacts on human health; and
- ➔ Reducing the adverse effects and ancillary risks.

US \$1.3 trillion (incl. demand)





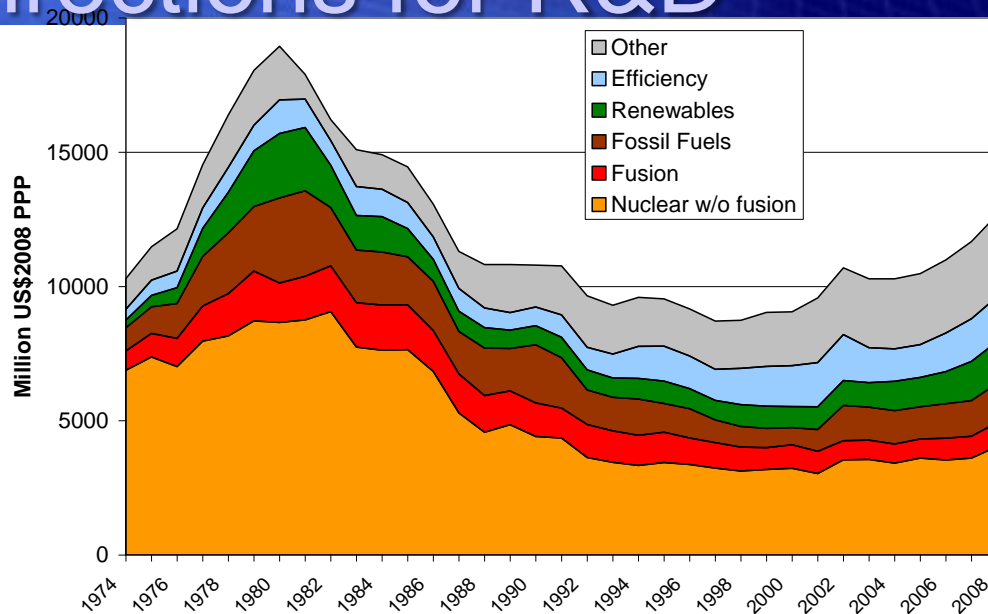


Source: Riahi et al, 2011

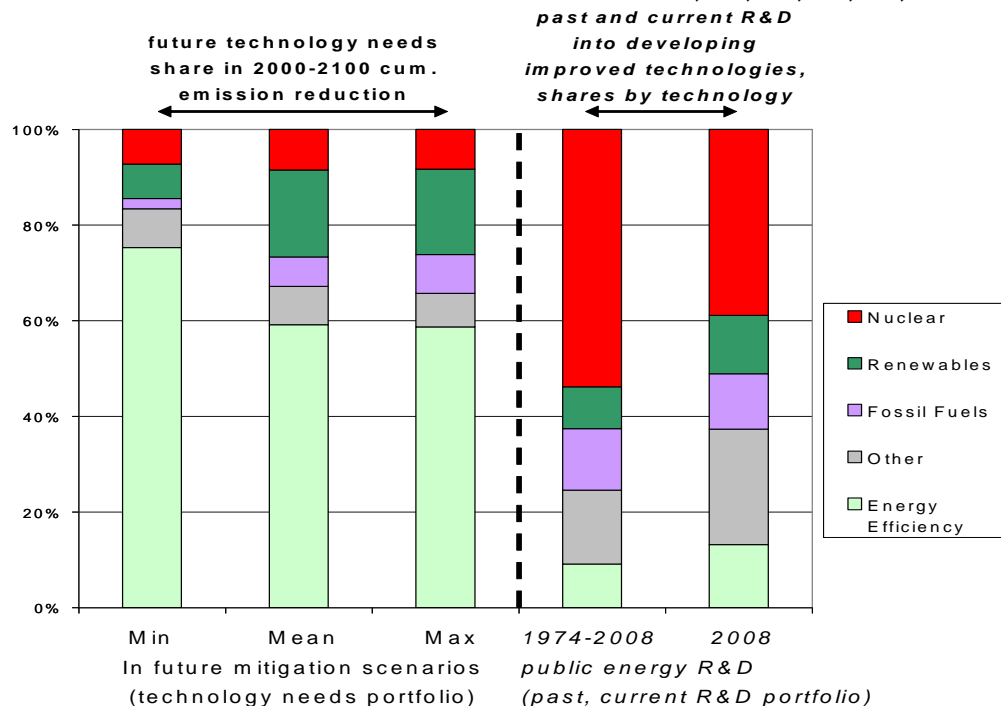
Combinations of resources, technologies, and policies that can simultaneously meet global sustainability goals also generate substantial and tangible near-term local and national economic, environmental, and social development benefits.

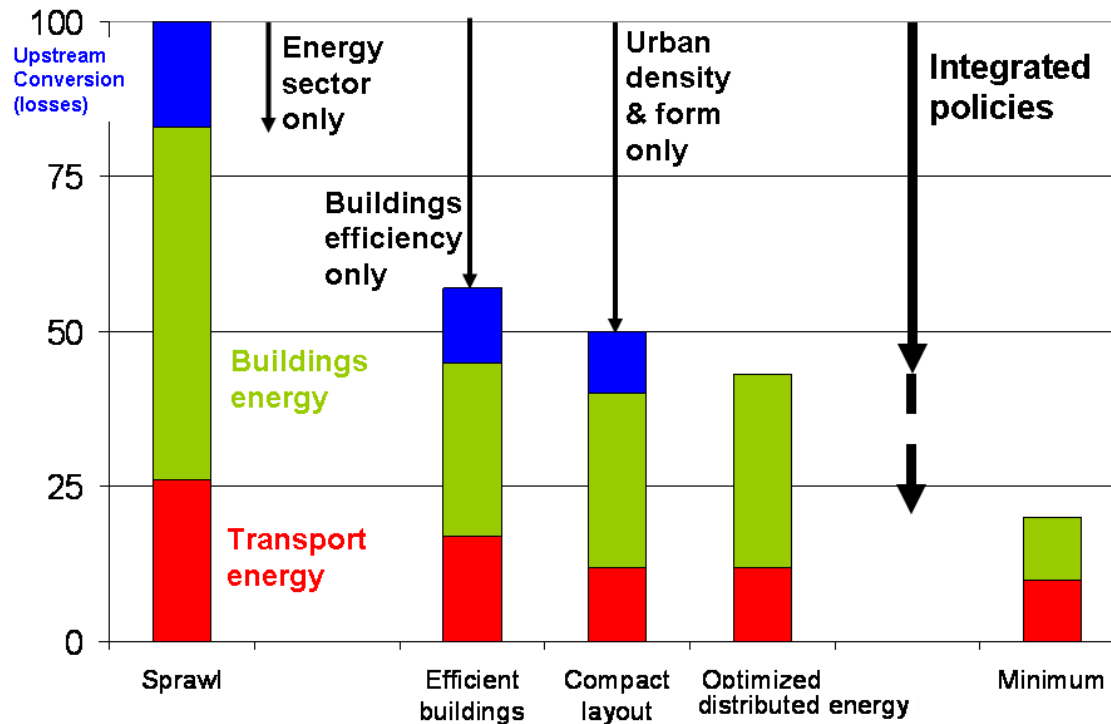
- ➔ These include increased employment options, new business opportunities, productivity gains, improved social welfare and decreased poverty, more resilient infrastructure, and improved energy security;
- ➔ These benefits make the required energy transformations attractive from multiple policy perspectives and at multiple levels of governance.

Public Sector Energy RD&D in IEA Member countries by major technology group



Distribution of past and current energy R&D as compared to future technology needs from the pathways analysis





Simulated energy use for an urban settlement of 20,000 inhabitants using the SimCity Model combining spatially explicit models of urban form, density, and energy infrastructures, with energy systems optimization. Source: Chapter 18



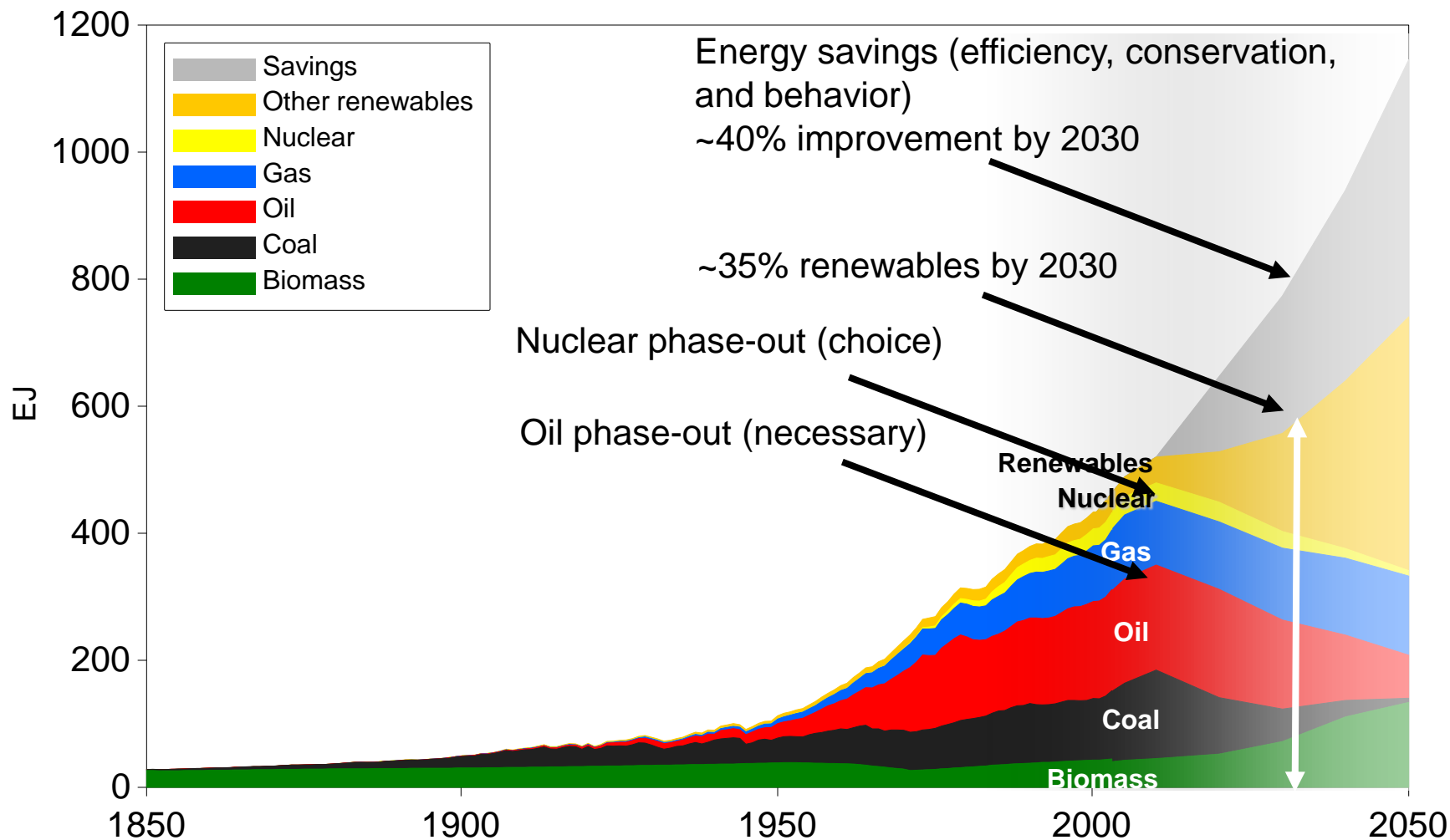
2012 INTERNATIONAL YEAR OF
SUSTAINABLE ENERGY
FOR ALL

2030 Energy Goals

- Universal Access to Modern Energy
- Double Rate of Energy Efficiency Improvement
- Double Renewable Share in Final Energy

Aspirational & Ambitious but Achievable

no CCS, no Nuclear



Source: Riahi et al, 2011

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