Translating Analysis and Modelling Results to Strategy and Policy

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From modeling & analysis to policy & strategy

Energy analysis and modeling is not and end in itself.....

It's purpose is to improve policy formulation, implementation and monitoring

- Comprehensive energy analysis and planning is a crucial part of policy and decision-making within the energy system
- It helps define a strategic vision, vets policy targets, set priorities and the sequence of actions over different time horizons, e.g.,
  - assessing the efficacy of a renewable energy portfolio target and its consistency with the country's NDC
  - demand side versus supply infrastructure development
  - stranding assets (premature retirement) versus natural turnover of capital
- By aligning the actions of government institutions, development partners, private sector agents and project developers, the effectiveness of investments can be greatly improved

Energy planning cannot be accomplished between noon and lunchtime

- The complexity of contemporary energy and electricity system planning tools and associated data requirements has steadily grown and there is no end in sight
- Numerous assumptions and policy concerns – always in flux
- Modelling is a continuous process that quasi never ends
- Developing the skills to effectively use mathematical tools can be a time consuming process
- ….and what rests – rusts
- Capacity building in energy modelling, analysis and planning requires institutional determination and support
- Maintaining the capacity (knowledge and skills preservation) and enhancing local capabilities calls for dedicated human and financial resources
- Modeling can be an effective communication and negotiation tool

Energy analysis and modeling is not and end in itself.....

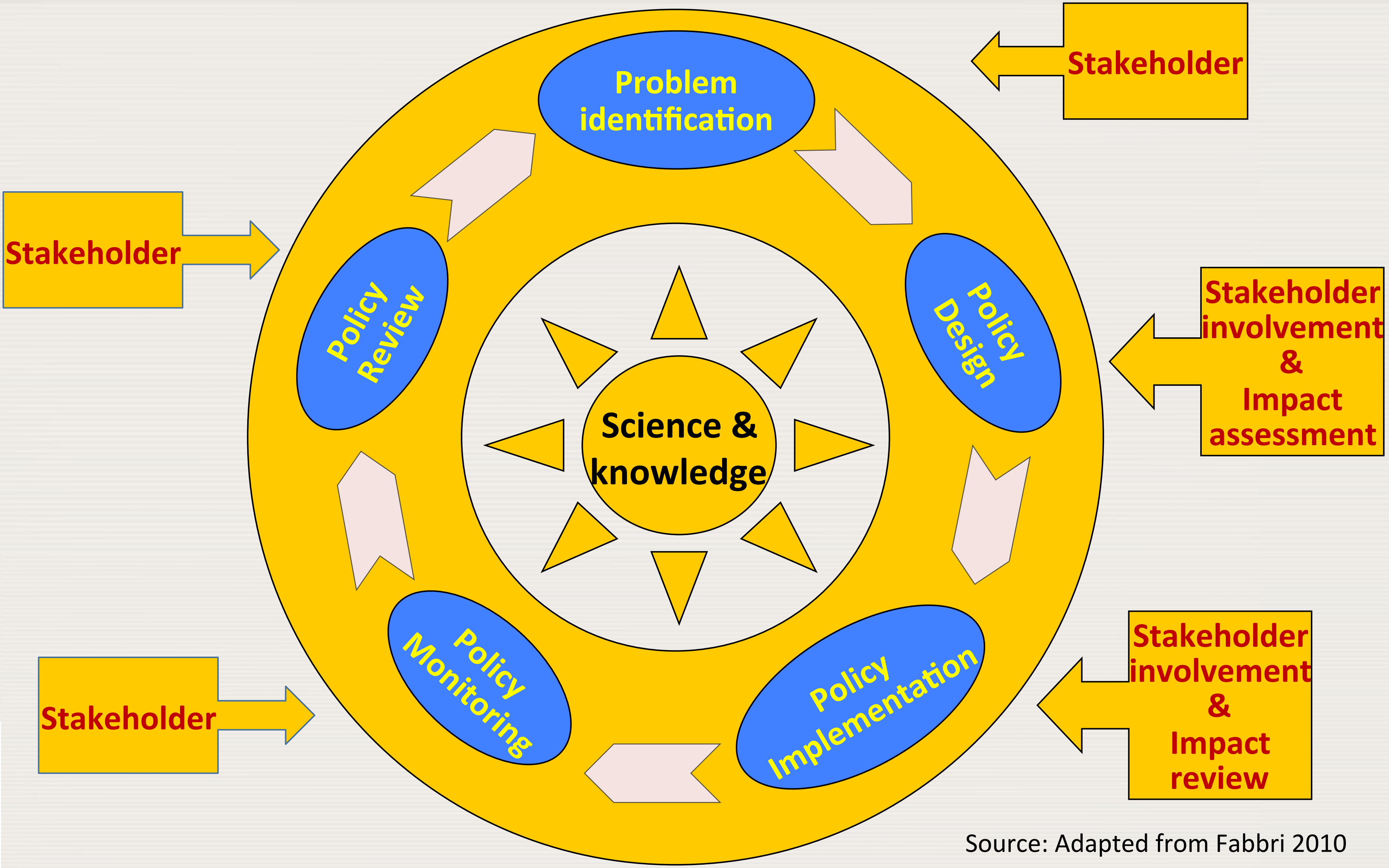
- Capacity building in energy planning is about developing national competence:
  - capability of national experts and analysts to perform energy demand and supply analysis
  - capability to convert analysis findings into policy-relevant information and recommendation
  - capability to formulate evidence-informed policies and strategies of action
- Capacity building is also about the edification and enhancement of the comprehension of the nature of energy planning, its benefits and pitfalls at the policy and decision making institutions
  - the role of assumptions in shaping the results
  - black-box syndrome
  - transparency and repeatability
- Crucial question: How to connect/link modeling & analysis to institutional planning and policy/decision making?

Science – Policy Interface

- Science–policy interface (SPI) refers to mechanisms that effectively bring scientific research into policymaking
- Avenue for finding solutions for energy security, health and environmental challenges *through strengthening collaborations between research disciplines and public administrations*
- It has been rapidly gaining recognition and importance in global environmental governance
- New terminology: Science informed decision / policy making
- SPIs meant to open frontiers between research disciplines and other actors by strengthening collaboration, e.g., for addressing and diagnosing social, economic, health or environmental challenges
- Prerequisite: Respect for scientific methods of observation, experimentation, and challenge of conventional views

Note: Here, the terms science and models are used interchangeably. Similarly scientist is a proxy for analysts, strategists, planners and policy advisors as well as engineers etc.

Policy making cycle & SPI



Source: Adapted from Fabbri 2010

Science – Policy Interface

- Traditionally, SPI has been a one-way approach
- Scientists have begun to concern themselves with aligning their research to pressing needs of the policy arena (!)
- SPI successful if linked to pressing development issues
- Need for a two-way communication approach that allows scientists and policymakers to work together towards identifying environmental priorities and proposing consensual solutions
- Science become aware which research can impact policy to develop policy-relevant research plans and policymakers can indicate (and note) the fields where more research is required
- Scientists and policymakers can benefit in different ways
  - Scientists: Practical applications of science—priority-based
    - Need to develop and refine tools and operational methods
  - Policy makers: Evidence-based decision-making
    - Based on access to new sources of information and updated databases
  - Both: Trade-offs, synergies and uncertainty

Science – Policy Interface

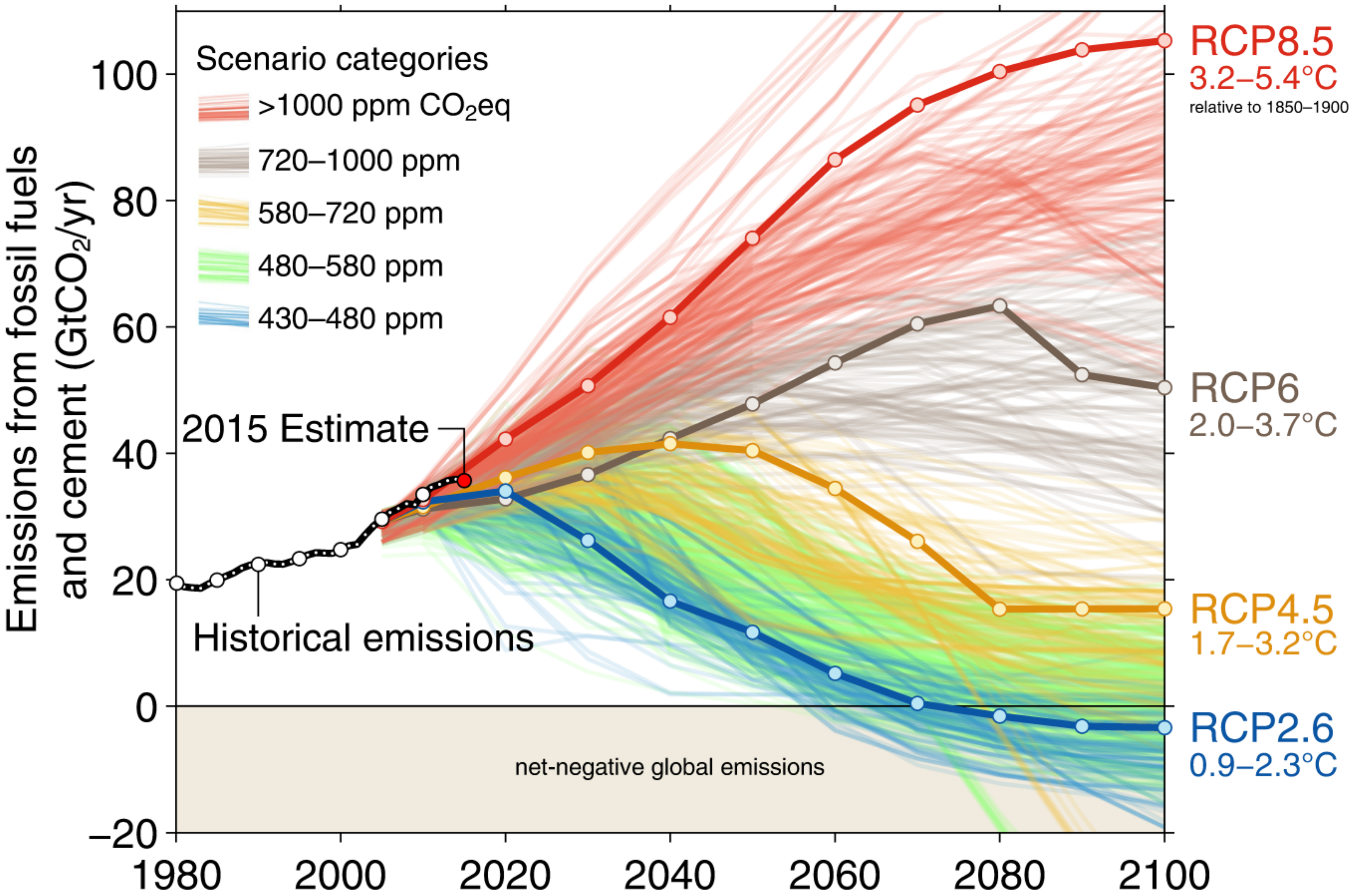
- SPI experience (science has successfully shaped policy decision-making), exists at all levels – local, national, international & global
- Prominent examples of science-informed policy making include
  - Paris Agreement
  - Convention on Long Range Transboundary Air Pollution (LRTAP),
  - Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)
- National examples
  - Numerous national energy road maps and 'white papers' based on MESSAGE analyses
  - National communications to the UNFCCC
  - NDC analyses
- The assessment reports (ARs) of the Intergovernmental Panel on Climate Change (IPCC) demonstrate how scientific analysis and knowledge can inform decision-making on climate change matters at all levels
- Still, climate change remains too complex an issue to communicate to non-expert audiences (best actions among several alternatives)
- Hence, the "information deficit model", i.e., the assumption that the science communicated to decision-makers will adequately inform decision-making processes, is flawed

From analysis and assessment to strategy and policy

Robert T Watson (2005) once listed the following characteristics:

- the analysis must be demand driven, and involve experts from all relevant stakeholder groups in the scoping, preparation, peer-review and outreach/communication;
- the process must be open, transparent, representative and legitimate;
- the process should incorporate institutional as well as local and indigenous knowledge whenever appropriate;
- the results and analyses need to be technically accurate;
- the results and analyses need to be policy-relevant but not policy prescriptive—providing options, not recommendations;
- plausible scenarios of the future should be relevant for policy-formulation over a range of spatial scales from local to regional and global;
- the conclusions must be evidence-based and not value-laden, i.e. they must be devoid of ideological concepts and value systems (however, it should be recognized that the assessment conclusions will be used within in a range of value systems);
- it must cover risk assessment, management and communication; and
- it must present different points of view, and whenever possible quantify the uncertainties involved.

Range of projected CO_2 emissions



Models – a science tool for informed decision/policy making

- In this presentation, the terms science and models are used interchangeably
- Science–policy interface (SPI) refers to mechanisms that effectively bring scientific research into policymaking
- Avenue for finding solutions to, for example, health and environmental challenges *through strengthening collaborations between academia and public administrations*
- New terminology: Science-informed or evidence-based decision & policy making
- Rapidly gaining recognition and importance in global environmental governance
- Prerequisite: Respect for scientific methods of observation, experimentation, and challenge of conventional views

Models, modeling and their impact on policy formulation

- The ultimate objective of most scientists: expand knowledge and to see this knowledge make a difference towards a ‘better’ world
- But what is the role and impact of models in public policy-making?
- This timeworn, long- standing question suggests that there is no straightforward simple answer
- Suffice to note: scientists and academia are often bewildered by the apparent failure of their scientific evidence to affect policy
- Policy makers are vexed by scientists’ ability to identify problems and offer remedies, yet frequent inability to place their work in the context of timely and feasible policy solutions
- Scientists fail to appreciate the multitude of “decision making” pressures faced by policy makers

The glitch for academics to note

- Politicians are usually elected for other reasons than a scientist's field of research
- Politics is an exercise in forging compromises (trade-offs)
- Access to the decision making 'ecosystem' and timelines matter
  - In cases of emergencies, politicians are more inclined to adopt scientific advice instantly through standard formal channels – risk communication and risk management
  - Regulatory and slow-burning policy issues, internal policy advisors can ensure the integrity of science while academics from outside government are critical sources of information analysis and commentary
- Need for capacity building on both the supply and demand sides of the SPI
- Politics is not 'science' – hence no guarantee for a place of scientific evidence in policy-making

Adapted from P. Gluckmann 2016

Prerequisites for an effective model-policy interface

- Open frontiers between research disciplines/academia and political-administrative actors by strengthening collaboration and developing partnerships
- Acknowledge the inherently different temporal scopes of the operation of political/administrative institutions versus research laboratories and academic-educational establishments
  - Ministries – unlikely to champion long-term internal modeling capability and maintain competence
    - Often no sustainability beyond a time and resource-limited donor cycle
  - Academia – more likely, especially if energy planning becomes integral part of standard curricula
- ***Modeling-analysis capacity in public administrations***
  - Model literacy: Apply (possibly also develop/enhance) existing models (use mode)
  - Ensure transparency of assumptions – stakeholder input
  - Interpret/translate model results as a basis for policy formulation, strategic decision making, investment and operational decisions
  - Have senior policy advisors and decision makers understand the inherent limitations of modeling and the uncertainties involved

Prerequisites for an effective model-policy interface cont'd

- ***Modeling-analysis capacity in national research organizations and academic institutions***
  - Modeling and analysis teaching and research as integral part of operations research (OR), energy-economics, environmental studies, engineering or geography
  - MSc in contemporary energy-environment planning
  - Analysis and planning tools follow state-of-the-art, especially with communities of practice and a vetting system in place
  - Ensures a continuous supply of modeling and analysis talent and competence
  - Verified and testes tools and expertise available when needed
- ***A two-way communication approach: Linking Demand and supply***
  - Scientists/modelers work with policymakers towards identifying sustainability priorities and proposing consensual targets/solutions
  - Policy makers know where to turn to
  - Science become aware which research can impact policy to develop policy-relevant research plans and policymakers can indicate the fields where more research (e.g., advanced models) is required
  - Not just a one time affair: Communication and interaction from problem identification to policy design, implementation and review – usually a multi-iteration process

Science – Policy Interface: Limitations

- Epistemological limits of climate related evidence are not necessarily constraints to decision making, even in the face of large uncertainties concerning this evidence
- Evidence to inform decision-making requires three key interconnected attributes (Cash et.al, 2002):
  - *credibility* (of the information vetted through peer review; and of those producing and reviewing it),
  - *salience* (relevance of the information provided to decision makers), and
  - *legitimacy* (the extent to which the information produced is fair and considers the values and needs of different actors)
- Definitions, e.g., what constitutes 'dangerous anthropogenic interference with the climate system' cannot be informed by science
- Science can help shed light on "what – if" questions but policy has to determine what is socio-politically acceptable and what is not
- Science cannot yet
  - conclusively attribute a single extreme event (hurricane Harvey or Irma) to climate change but the events are consistent with what research projects: Increasing frequency and severity, etc.
  - project the timing and degree of the next oil price surge or technical break though

SPI: The way forward

- Past environmental policy has generally been driven by science
  - E.g., side effects of pesticides, thinning of ozone, health effects of mercury, CO_2 for climate change
- Science is key to generating acceptance and legitimizing policy intervention
- Scientists feature among the voices more « trusted » by citizens
- Environmental policy develops more easily when science backs it … and those adversely affected by policy are quick to challenge its scientific foundations!
- The entire policy cycle from idea/concept development to policy implementation & review must rest on a firm technical and (constantly evolving) scientific base
- Performance indicators and trends need to be based on solid scientific evidence
- Analysts indicate clearly confidence and uncertainties of their modeling analyses