STRATEGIC ORIENTATION FOR THE FUTURE OF THE PMR: UPSTREAM ANALYTICAL WORK TO SUPPORT DEVELOPMENT OF POLICY OPTIONS FOR MID- AND LONG-TERM MITIGATION OBJECTIVES

I. BACKGROUND

1. In October 2013, the PMR Secretariat presented PMR Note PA7 2013-2 (*Strategic Orientation for the Future of the PMR*) that lays out a number of options on how to scale up PMR activities. Strengthening and expanding upstream analytical work to support Implementing Country policy development is part of the proposals to "deepen readiness activities at the country and international levels."

2. As indicated in the PMR Note, many countries are at a cross roads in their decision to adopt a carbon pricing instrument as a means to deliver mitigation objectives. Country experience shows that introducing a major policy or economic instrument, such as an emissions trading scheme (ETS) or carbon tax requires solid and comprehensive analytical work to ensure coherence with existing policies. Some countries have incorporated such upstream analytical work into their Market Readiness Proposals (MRPs). For others, it remains a crucial element in order to assess the development and GHG mitigation impact of adopting various carbon pricing instruments. As part of the proposed deepening PMR support to countries, the PMR has initiated a policy work stream on policy mapping and economic modeling, to help countries make these assessments.

3. In consultations with countries it is also clear that setting mid- and long-term mitigation goals and understanding the development implications of such goals is absolutely critical in any country's choice of mitigation instrument. As countries start to identify post-2020 mitigation scenarios and the policy options to carry out those scenarios, a carbon pricing instrument - how and to what extent such an instrument would play a role under the various scenarios - should be an important consideration.

4. The PMR's analytical work stream corresponds to the ongoing discussions under the UNFCCC regarding "nationally determined contributions" (NDCs) for the envisioned 2015 agreement. At its 19th Conference of the Parties (CoP) in Warsaw, countries were invited to "initiate or intensify domestic preparations for their intended nationally determined contributions",[1] and to communicate the "contribution" well in advance of the 21st CoP – possibly by the first quarter of 2015.

5. A number of PMR Implementing Country Participants have indicated to the PMR Secretariat that the proposed PMR upstream analytical work would fit well into their country work to identify post-2020 mitigation scenarios and would contribute to their NDCs. In order to respond to countries' needs and given the tight schedule set in the Warsaw decision, there is urgency to scale up and speed up the support for policy work that has already been incorporated into the PMR technical work program.

6. It should be emphasized that despite of the relevance of such work to the UNFCCC the approach to the PMR analytical support is inherently technical and disconnected from the negotiating process or

[1] Decision 1/CP.19, Further Advancing the Durban Platform, UNFCCC

political concerns. While the analysis would provide useful technical input into countries' decision-making processes, NDCS are ultimately a country's decision.

7. This note outlines a modality for providing analytical support to countries, including an annex that could be used as a tool for scoping out such analysis.

II. MODALITY FOR POLICY SUPPORT

Scope of work and approaches

8. The proposed analytical support would include three parts (*see annex for details*). An interested PMR country could choose to pursue any or all three modules. They include: (i) policy mapping and options assessment; (ii) determining economic and emissions scenarios to 2020; and (iii) aligning economic growth with mitigation objective: setting post-2020 mitigation scenarios.

9. This framework is meant to be a flexible way to bring the latest analytical tools to developing country needs. As these needs vary (for some countries, much work has already been done, including through their Market Readiness Proposals), it is important to identify areas of additional and complementary analysis. For example, work in some countries could largely focus on the impact assessment of a carbon pricing instrument in post-2020 scenarios; for others, the study could combine analysis of both the 2015-2020 and post-2020 time frames. It is also important to note that the scope of the framework could be expanded as required, and new elements can be added for individual studies.

10. This proposed work would draw on analytical tools developed by the World Bank and other organizations. The methodologies for the work will be shared and discussed with PMR Participants and any partner organizations.

Which countries would receive support?

11. In principle all Implementing Country Participants would be eligible for such policy support. However, depending on the amount of resources available, it is proposed that the work could start with a few countries that convey interest and where the World Bank is able to build on existing capacity to deliver such support.
12. The PMR Secretariat would invite Implementing Country Participants to express interest in undertaking work along the lines of this proposal. The PMR Secretariat and the World Bank will work with countries to identify scope, timetable, and cost of the proposed work.

Resource allocation

13. For FY14, the PMR has allocated “seed” funding of $300,000 (out of its total one-year budget of $1 million for the entire technical work program) to kick start this work program. However, from

experience, it is assumed that the cost of a comprehensive study, covering all three of the modules presented above, would be about $1.5 million for a mid-sized country. Of course, since the scope of the proposed work and coverage of already existing studies would vary across countries, the actual resources that would be put into each country program would be determined by the World Bank in consultation with the host country.

14. Given the potential high interest from countries and the importance of such work in helping countries identify mid- and long-term mitigation scenarios (thus contributing to the preparation of their NDCs), the PMR Secretariat proposes allocating US$10 million from the existing trust fund. The PMR trust fund would remain solvent with this allocation. For a full understanding of the implication of this on the PMR's long-term plan, see PMR Note PA8 2014-1. In anticipating potentially strong interest from PMR countries, the Secretariat has already started fund raising to support this important work. For accounting purpose, a specific "window" for policy support could be created within the PMR trust fund.

Timetable

15. In order for this work to be truly relevant and useful in supporting countries to prepare their NDCs, there is an urgency to kick off the analytical work as soon as possible. It is hoped that some preliminary results for at least a few countries could be produced by early 2015. The completed work for any given study may take two or more years.

Role of Partnership Assembly

16. The PMR is a valuable forum for sharing knowledge and learning. Participating countries would share outputs and lessons, and benefit from feedback and experience from partnership countries. Technical workshops will be organized as needed. At each PA meeting, the PMR Secretariat will provide updates on the status of the budget and country allocations for work under this framework in order to seek guidance from the PA.

III. ACTION BY THE PA

17. The tool contained in the annex is in draft form. Participants are invited to provide written comments on it to the PMR Secretariat by March 31, 2014.

18. The PA is also invited to consider the modality proposed in Section II. If feasible, the PMR Secretariat seeks the PA's endorsement on allocating US$10 million to support the policy analytical work.

Overview: Supporting Policy Analytical Work

Development of Policy Options for Mid- and Long-Term Mitigation

1. One of the objectives of the PMR is to support countries to develop and implement cost-effective instruments to scale up mitigation efforts, including carbon pricing policies. Experience shows that introducing a major policy instrument, such as an emissions trading scheme (ETS) or carbon tax, requires solid and comprehensive analytical work in order to ensure coherence with existing policies. Furthermore, setting mid- and long-term mitigation goals and understanding the economic development implications of such goals is critical before a policy choice can be made.

2. As countries assess the impact and effectiveness of their existing policies to achieve mitigation goals, there is an urgent need to provide upstream policy support to identify options for post-2020 mitigation scenarios. Building on the existing PMR policy work stream and PMR Implementing Country Participants' Market Readiness Proposals, the PMR Secretariat proposes to introduce a tool for policy analysis that can be offered to PMR countries as a complement to their ongoing work. This document provides an overview of what this tool would include: namely a series of activities to support countries' efforts to analyze potential mid- and long-term policy approaches to mitigation. These activities are not meant to be exhaustive, nor exclusive. They are meant to be a methodological contribution to countries' work to define mitigation ambitions and policies in accordance with their national circumstances and development goals.

3. The proposed framework of activities includes three components:

   - **Component I: Policy Mapping and Assessment.** This section is intended to provide a set of key elements that facilitate analysis of interactions between climate goals/policies and other related instruments, including energy policies, and provide an assessment of various policy options, including carbon pricing instruments. The purpose is to help countries identify an effective and cost-efficient policy package for achieving development and mitigation goals.

   - **Component II: 2020 Scenarios for Economic Growth and Emissions.** Building on the policy analysis in Component I and a country's economic structure and growth strategy, this section provides a framework for projecting emissions growth through 2020. It includes two scenarios: one that reflects existing policies and another that reflects "new" policies. The analytical work in this component would help countries track progress on their 2020 target, identify potential opportunities to enhance the implementation of policies to achieve greater levels of mitigation, and prepare for mid and long-term mitigation scenarios.

   - **Component III: Aligning Economic Growth with Mitigation: Setting Post-2020 Mitigation Scenarios.** Following the approaches outlined in Components I and II, this section provides tools for policy option assessment, and sets out a framework to construct a range of scenarios for a

country's economy that match with mid- and longer-term mitigation goals for 2030 to 2050. The aim is to show a broad range of possible economic futures that could evolve as a result of the interaction of various growth drivers with different climate mitigation policies, and thereby help policymakers identify feasible and (for them) desirable longer-term goals.

4. A significant amount of the analytical work will be based on economic modeling. The World Bank, working together with other organizations, will support countries and their domestic institutions in this modeling work. A description on methodology will be prepared in a separate note, if needed.

5. Some countries may have already carried out analytical work on the components listed in this tool through, for example, low carbon development studies. It is important for countries that are interested in such policy support to take stock of existing work, including work that is being carried out as part of the country's MRP. As a starting point, these countries should identify which gaps in analysis remain. Because countries will be starting with different levels of analysis already completed, this tool is designed to allow sufficient flexibility for countries to opt for analysis on individual components. As countries face different development and mitigation priorities, the topics and focus of their analytical studies could vary and new components may be added for individual country studies.

6. The tool is currently in its draft form and will be subject to consultation with relevant experts and PMR Participants. As experience is gained through the use of this tool, it will be further modified to reflect practice and insights from the countries that are using it.

DRAFT

Tool to Develop Policy Options for Mid- and Long-Term Mitigation Objectives

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Component I: Policy Mapping and Policy Option Assessment

Component 1: Policy Mapping and Assessment

- Mapping relevant policies that contribute to climate mitigation goals
- Assessing coherence of such policies
- Assessing options for "new" policy(ies) (including a carbon pricing instrument)

Objectives

1. Climate related policies fall into two categories: those that directly aim at GHG abatement and those that serves other policy objectives but have a significant impact on GHGs.[2] Climate policies include carbon pricing through emissions trading or carbon tax, subsidies for emissions reducing activities, regulation of emissions producing activities, policies to develop new emissions savings technologies, or new emissions mitigation approaches, e.g., carbon capture and storage (CCS). Policies that affect emissions but are usually implemented primarily for other reasons include energy taxes and subsidies, policies that affect energy efficiency (for example minimum product standards), development of low-carbon energy supplies such as renewables, nuclear power, or fuel substitution, regulation of energy using industries for air pollution, and so forth. The distinction between these two categories is not always clear as policy objectives can overlap. Irrespective of their objectives, interaction is common and this interaction can strengthen or weaken policy impact.

2. Some countries are exploring—or are in the process of introducing—new policy instruments, such as a carbon pricing scheme or other instruments that directly or indirectly target emissions. A common challenge facing these countries is how to coordinate a range of policies and ensure a consistent, coherent, and robust policy framework (the "policy mix") to deliver objectives. This Component therefore aims to:
   - Map relevant policies in sectors with significant impacts on emissions trajectories, such as energy, industry, transport, buildings and agriculture. This mapping should be done at the national and sectoral levels;
   - Assess the effectiveness and mitigation impact of the relevant existing policies/instrument;
   - Assess the needs and options for "new" policies;
   - Identify complementarity, overlapping, or tension of the relevant policy instruments (including new and existing policies);
   - Identify a package of policies, regulations and economic instruments that mutually reinforce one another to achieve mitigation objectives in the context of development and other policies (e.g., energy policy).
3. The analysis conducted as part of this component provides a basis for Components II and III, which focus on mid- and long-term emissions scenarios. If needed, a separate note will be issued related to

[2] See IEA (2013), *Managing Interactions Between Carbon Pricing and Existing Energy Policies*, Paris.

the selection of a carbon pricing instrument and the interaction of such instruments with other policies. For the purpose of this note, a carbon pricing instrument refers to an emissions trading scheme, carbon tax, or other related economic instrument that creates a stable and uniform price signal on greenhouse gas emissions across many economic activities.

A. Mapping existing and planned policies that target GHG emissions: assessing effectiveness and identifying interactions

4. Policy mapping and identifying policy interaction is a first step in assessing policy effectiveness to reduce GHG emissions. Mapping may cover existing policies, those that are firmly planned, and those expected to come into effect in the short term. The goal of the mapping exercise is to better understand effectiveness, cost-efficiency, and trade-offs of the relevant policies (e.g., what is the impact on GHG abatement? How much does it cost to achieve this impact on abatement?). The elements listed below can be used to map policies at the national and sectoral level.

a. Map existing and planned policies and their institutional arrangements:
   - Identify stated policy objectives, including classification as climate policy or other policy with impact on emissions (Table 1 may be used for organizing the mapping exercise). The mapping may also include policies that run counter to an emissions mitigation objective, for example fossil fuel subsidies and other policies supporting high-emissions activities; and
   - Mapp regulatory and institutional arrangement for each policy and identify government agencies responsibile for policy design and implementation.

b. Assess implemenation:

   - Determine status of implemenation of each policy;
   - Identify any barriers to implementation;
   - Identify the sectors that could potentially deliver additional emission abatement (based on marginal abatement cost curves or other modelling).

c. Describe the economic sector(s) adressed by the policy, including

   - Shares in total (national) emissions;
   - Trends in production, technology, and emissions over time;
   - Estimates of emissions reduction potential and costs (using cost assessment methods that can identify direct and indirect cost elements);
   - List policies that significantly affect activity in each sector; and
   - Identify structural specifics relevant for emission abatement.

d. Determine empirical estimates of emissions abatement effects:

   - Estimate effects of these interactions on greenhouse gas emissions (magnitude of abatement);

- Determine cost of emissions reductions (if possible, using implicit carbon prices), taking into account sectoral and policy interactions;
- Identify distributional impacts of the policies (including effects on industry profits considering the extent of price pass-through and any assistance provided by governments, and net costs to consumers;
- Identify co-benefits and adverse side effects to the economy; and
- Identify the fiscal impacts of policies.

e. Analyze Policy interactions:
- Identify stand-alone policies (for certain sectors);
- Identify policies with significant overlap (complementary mechanisms, overlapping mechanisms); and
- Identify any reinforcing or countervailing effects between and among existing or "new" climate mitigation related policies.

Table 1: Classification of policy instruments

Economic instruments	Instruments of price and quantity controls, environmental and/or energy taxation, tradable certificates/emissions trading, minimum prices, liabilities, tariffs, market-reforms
Fiscal instruments	Subsidies and public infrastructure expenditures, special loans, tax deductions, public procurement and investments; also subsidies for activities that increase emissions, in particular fossil fuel subsidies
Commitments	Voluntary and/or negotiated agreements between industries and governments, agreements among industries and/or enterprises
Regulation	Legal obligations and standards, technology or product bans or limitations, technical standards, and specifications
Information	Information, motivation, and technical assistance, reporting obligations, other measures to reduce structural barriers
Education	Framing and supporting education and training
Research, Development & Deployment	Public support of research, development and deployment, basic and applied research, support of demonstration projects, lead-market development
Others	Indicative targets, planning, removal of barriers etc.

B. Assessing "new" policy options

5. Following the policy mapping and interaction exercise for existing and planned policies, an assessment can be carried out to identify any new policies that could enhance GHG abatement, particularly for achieving longer-term abatement objectives. The analysis may include policy options that are currently under consideration or that appear feasible in the short term; but also, if a country wishes, as an unconstrained exploration of the full range of policy options.

6. These "new" policy options may include the full range of policy choices; but also, in view of the interest of the PMR countries, could analyze a portfolio of economic instruments, for example:
   - A carbon pricing instrument – carbon tax or emissions trading scheme;
   - Other policies that would have impact on carbon pricing, such as removal of subsidies;
   - Market-based instruments for renewable or other low-carbon electricity supply options; and
   - Demonstration and employment of technology such as CCS.

7. Analysis of the "new" policy options would cover the range of elements identified in (c), (d), and (e) under A above, including empirical estimates of emission abatement effects, social and development impacts, and potential interaction implications with other policies.

8. It should be noted that a comprehensive and systematic mapping of the relevant policies, including political and economic dimensions and an understanding of the regulatory and institutional framework ("the landscape"), requires a hybrid approach, including qualitative and quantitative analysis. The qualitative and quantitative element of policy mapping and assessment can be methodologically demanding. On the other hand such analysis provides an important basis for the choice, implementation, and strategy of new GHG abatement instruments.

Component II: 2020 Scenarios for Economic Growth and Emissions

Component II: 2020 Scenarios for Economic Growth and Emissions

- Economic projection: growth and economic structure
- Projection of emissions growth under existing policies and under "new" policies
- Tracking progress toward domestic 2020 emissions abatement targets

Objectives

9. The aim of this component is to help countries with analysis on their emission trajectories under a variety of possible economic projections over the remainder of the decade. This exercise helps identify what policy changes could increase the likelihood of achieving or surpassing the goals, and what policy reforms could be undertaken to achieve the goal more cost-effectively. The approach is to use nationally available data on economic trends, emissions trends, policies in place, and possibilities for new policies.

10. The work under this component can be used to complement Component I or be used independently. Component II both builds on and contributes (by providing quantitative input into Component I analysis) to the analysis under Component I. However, it can also be used independent of the other components provided in this Tool, in which case relevant elements outlined in Component I may be incorporated into the sections of this component as needed.

A. Economic projections

11. This sub-component provides a set of projections for the rate of economic growth and nature of structural or compositional change of the economy to 2020. These are used in the construction of emissions projections and to inform the analysis of mitigation policy options. Longer-term projections are established in Component III.

a. Projections of economic growth

12. The starting point for projections is a baseline of economic growth to 2020, drawing on assumptions used in each national government's economic context. The principal indicators for establishing this baseline are, for example:
    - Gross Domestic Product (GDP) and Gross National Income (GNI);
    - Population;
    - Labor force participation;
    - Investment;
    - Productivity growth; and
    - Fuel price.

13. In addition to a central projection, other scenarios should be provided based on important potential differences in future growth drivers. It can be useful to draw comparisons between nationally-produced projections and widely used projections such as those by the IMF, the World Bank, the IEA, and other organizations.

b. Projections of economic structure and composition

14. In addition to economic growth projections, projections of economic structure to 2020 are also important. The principal indicators of these are:
    - Share of the primary, secondary, and tertiary sector in GDP;
    - Share in the economy of particular sectors that are energy and emissions intensive (e.g., mining, heavy manufacturing, or agriculture); and
    - Where available and relevant, share of expansions of energy and emissions intensive industries.

B. Emissions projections

15. Emissions projections are constructed based on the projections for economic and structural change, and under different assumptions about policy settings. The policy scenarios created as part of the mapping exercise in Component I are compared with existing 2020 emissions goals to help assess to what extent countries are on track to meeting their existing goals.

a. Baseline emissions (or emissions reference level)

16. Many countries have proposed mitigation targets for 2020 based on a reference level, which is based on base-year emissions, a business-as-usual (BAU) scenario, or a performance standard. Drawing on existing data and studies, this section presents an overall emissions estimate for the proposed reference level. Determining baseline emissions can be drawn from the PMR Guidance Note on Baselines and other studies.

b. Emissions trends and impacts of existing policies

17. The overview of a country's current emissions profile and recent trends should include a breakdown of large sectors into main activities, e.g., electricity generation into coal/gas/other; industry into chemicals, minerals, cement, etc. Elements may include:
    - *Recent emissions trends;*
    - *Drivers of emissions changes over recent years.* Analyze the drivers of change in national emissions and emissions by sector (following the same aggregation as used in economic projections). The previous five to ten years should be examined for this exercise. Changes in emissions as a result of changes in economic activity (measured in GDP and value added in sectors/industries) and changes in the emissions intensity of economic activity. Changes in emissions intensity are further decomposed into changes in the composition of outputs (at the national and industry level), changes in process technology (e.g., more energy efficient equipment), and changes in energy sources (e.g., switch from coal to gas as process energy source);
    - *Drivers, influences, and uncertainties of future emissions trajectories***.** As much as possible, identify the drivers that could influence future emissions trends. For example, shifts in economic structure away from or towards emissions intensive activities; technological changes e.g., investment in different production processes; market induced changes such as substitution between energy sources due to changing relative fuel prices; policy induced changes such as higher energy efficiency standards, expansion of renewable or nuclear power, reduction in

deforestation rates; and other factors. Countries are encouraged to also identify and estimate the effect of any policies that have tended to result in higher emissions, for example, fuel subsidies; and

- *Key policies* since the established reference level. Drawing from the elements under Component I on policy mapping and assessment, the aim is to provide an estimate of the impact of existing policies aimed at GHG mitigation, and their contribution towards a country's 2020 emissions pledge.

c. Emissions projections to 2020 under an Existing Policy Scenario to 2020

18. This section provides projections of emissions levels to 2020 under existing policies, assuming that the existing policies are continued and no significant new policies are in put in place. The analysis may draw directly from Components I and II and provide a central projection as well as other projections, as in Section A above. In addition, the projection may be built on the basis of elements such as (i) sector coverage; and (ii) estimated emissions impact as a result of implementation of the "existing" policies. The projection will elaborate key assumptions and uncertainties as well as methodology used for projections.[3]

d. Projections under a New Policy Scenario

19. This scenario provides projections of emissions levels to 2020 under assumptions for possible new policies. This work begins with a policy options analysis as conducted in Section B under Component I, identifying possible policy instruments that could be implemented in the short to medium term, with impacts to 2020. This choice should be made by countries in view of policy options that are or may come under consideration. This may include (in the context of PMR Implementing country Participants) a carbon pricing instrument and include assumptions about the scope and ambition of the instrument.

20. Policy scenarios may include one or several new policies, which would result in different emissions projections to 2020. This analysis would:

- Draw directly on Component I and economic projections, as well as the 'existing policies' projections identified above.
- Identify the likely effects on economic structure and growth of adopting individual new climate change mitigation policies.
- Where applicable, the 'new policies' scenario may include a scenario with a carbon price applied to parts of the economy where it is likely to be effective (refer to Component II), at different levels.

[3] A comparable scenario for emissions from fossil fuel combustion is the IEA World Energy Outlook "existing policies"; however, a national level analysis will usually arrive at different results given that it will draw on different data sources and more detailed information.

- The 'new policies' scenario may also include a scenario where a carbon price is combined with non-pricing (regulatory) instruments; and a scenario where there is extensive regulatory intervention to reduce emissions, but no carbon price.

21. Provide a number of possible outcomes at 2020, depending on policy scenarios chosen and differences in underlying conditions as in Section A.[4]

e. Tracking toward the 2020 target

22. If a country is interested in further analysis, emissions projections to 2020 can be compared to the country's existing 2020 emissions pledge. This analysis may include:
    - Compare projections to 2020 emissions targets or pledges;
    - Identify the main policy-driven impacts on emissions levels to 2020;
    - Identify what additional policies may be implemented to reach the 2020 goal, whether a more ambitious 2020 goal is possible, and what the uncertainties or barriers are for achieving the goal.

[4] A comparable scenario for emissions from fossil fuel combustion is the *IEA's World Energy Outlook* "existing policies," however a national level analysis will usually arrive at different results given that it will draw on different data sources and more detailed information

Component III: Aligning Economic Growth with Medium- to Longer-term Mitigation Goals: Setting Post-2020 Mitigation Scenarios

Component III: Setting Post-2020 Mitigation Scenarios

- Scenarios for economic growth for mid and long term (2020, 2030, and 2050)
- Emission scenarios to 2030 and 2050, including peaking year
- Approaches to economic modeling

Objectives

23. Under this component, work will focus on supporting countries determine scenarios that align with medium to longer term mitigation goals. The aim is to show a broad range of possible economic futures that could emerge as a result of exogenous drivers coupled with climate mitigation policies. The medium- to long-term policy scenarios are created with reference to the policy options analysis in Component II.

24. The scenarios constructed for 2030 (with projection points at 5 years) should be extended to 2040 and 2050 in order for the results for 2030 to not be distorted by the modeling cut-off date; of course, 2040 and 2050 results can also be constructed to demonstrate a longer-term pathway. The emissions peaking year may be established under the different scenarios.

25. All scenarios are based on assumptions, which are coupled with significant uncertainties. It is therefore critical to elaborate and disclose all the assumptions and parameters that have been used in constructing various scenarios, and to make sure that key uncertainties are addressed through scenarios-based sensitivity analysis.

A. Economic scenarios to 2030, 2040, and 2050

26. Different scenarios of economic growth and structure to 2050 should be constructed, with projection points at 5-year intervals. The aim is to underpin scenarios analysis of emissions goals and policy options for the mid to long term. Scenarios may be best framed as 'storylines', and should encompass a wide range of possible future economic trajectories, illustrating the inherent uncertainty about future developments over a multi-decade timeframe.

a. Global scenarios

27. Analysis starts from an indicative global scenario for global energy and natural resource prices, global output, and trade. The indicative global scenario will be common across the country studies, with reference to existing scenarios by some international organizations. Variations of the global scenarios can be used to facilitate sensitivity analysis at the national level. Countries can vary the global assumptions for their national modelling as desired.

b. Scenarios for economic growth and fuel prices

28. Several scenarios of economic growth to 2030 (in 5-year intervals) should be constructed. The longer-term projections may be built up from projections for the following:
    - GDP and GNP outlook;
    - population growth;
    - labor force participation;
    - productivity growth, with reference to models of income convergence;
    - fuel prices.

29. One economic scenario should be identified as a central scenario, not as a prediction but as an anchor point for the analysis of policies impacts. Comparisons can be made with scenarios used in other modelling exercises and projections, such as those used by the World Bank and other organizations.

c. Scenarios for economic structure

30. Several scenarios for economic structure should be created for the period from 2030 to 2050. These will, in many ways, be akin to the shorter-term projections in Component II, and use the same indicators listed there, but include a wider range of possible outcomes. Specific scenarios for economic structure may relate back to specific economic growth scenarios, for example, strong expansion of resource sectors may be coupled with scenarios of strong overall economic growth, and vice versa. One economic structure scenarios should be identified as a central scenario, not as a prediction but as an anchor point for the analysis of policy impacts.

31. The scenarios may also take into account different assumptions of the nature and extent of climate change mitigation action in other countries, and their effects on trade and investment in the country. For example, a scenario of strong global mitigation may be modelled to include a reduction in coal demand and an increase in price in global demand for biofuels, which may have implications for trade volumes and terms-of-trade within countries. The analysis may also attempt to incorporate possible impacts from climate change. For example, such a scenario may involve changes in agricultural production patterns and changes in international demand and prices for foodstuff.

B. Emissions scenarios to 2030 and 2050

a. Policy options analysis

32. An analysis of policy options should be conducted, identifying possible policy instruments that could be implemented in the longer term. Drawing on analysis in Components I and II, the policy option analysis could include a suit of the enhanced “existing” policies and “new” policies. Countries are encouraged to explore the full range of policy options, including those that may not appear feasible to implement in the short term. The policy options analysis could include, for example:
    - Implementation of minimum standards for energy efficiency in industry, transport, and the building sector that increase in stringency over time;

- Regulatory and other measures geared at reducing emissions in specific sectors, such as industrial processes and agriculture;
- Subsidies for research and development of advanced low-carbon technologies, resulting in cost reductions of deployment over time;
- A carbon pricing instrument, assuming broad scope and significant ambition; and
- Other market-based instruments, for example market-based support for renewable or other low-carbon electricity supply options.

33. The analysis should include policy support for structural change in the economy away from emissions intensive activities; as well as any transitional support for communities or regions affected by reductions in existing high-emissions activities (e.g., coal mining regions).

34. A number of scenarios for future policies that affect emissions will be posited. These will have different degrees of ambition, different sectoral focus, and different choices of policy instruments. They may be best framed as a number of different 'storylines' on possible future policy settings.

b. Scenarios for emissions outcomes

35. These policy scenarios are then combined with the economic scenarios, starting with the central scenario, to form a matrix of emissions outcomes based on different types and strength of policy effort, and different trajectories of economic growth.

36. The analysis can identify an envelope of possible emissions outcomes to 2030 (in 5-year intervals), 2040, and 2050, depending on economic developments and policy actions. Countries may wish to narrow this range to identify trajectories that may be desirable and feasible goals for future emissions and policy actions, and investigate these further.

37. For each scenario, the following parameters should be analyzed:

- A reference emission scenario;
- Cumulative emissions from the present to 2030 (and to 2050);
- Projection for emissions peaking year;
- Sectors covered;
- Key policies/instruments and assumptions; and
- Key uncertainty.

Illustration of a matrix of possible emissions scenarios to 2030/2050

Policy scenarios / Economic scenarios	**Slow growth**	**Medium growth, relatively fast expansion of *resources* sector**	**Medium growth, relatively fast expansion of *services* sector**	**Fast growth, especially in resources sector**
Comprehensive policy effort, strong ambition (economy-wide 'high' carbon price)	…			
Comprehensive policy effort, medium ambition (economy-wide low to medium carbon price)	…			
Focus on demand side efficiency (emphasis on standards in industry, transport, and housing, etc.)		(emissions outcomes shown here)		
Focus on fuel switching (pricing and/or regulation to encourage shift to renewable/nuclear power supply, electrification of transport, etc)		(some scenarios identified for detailed economic analysis)	…	
Focus on land use (policies to encourage reforestation/reduced deforestation and lower emissions from agriculture; some other policies)				…