CEPS POLICY BRIEF
Thinking ahead for Europe

The Path towards 1.5 degrees Celsius

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Key Point

In less than one year, the country-led exercise in preparing Intended Nationally Determined Contributions (INDCs) has accomplished what the top-down approach characteristic of the UNFCCC has not been able to achieve in over 21 years of negotiations, namely to produce a sound agreement to reduce climate change. As such, the UNFCCC should adopt a new process similar to that used in developing the INDCs, in which Parties to the Convention would mobilise their national efforts but on a wider scale and under certain agreed binding conditions.

Policy Recommendation

To ensure a comprehensive engagement, a four-tier system is proposed with the most developed nations called upon to take the lead, but with the very least developed nations also contributing to the intended UN objective.

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Introduction

The debate between the so-called Annex I (developed countries) and non-Annex I or Annex II Parties (developing countries) on how to tackle climate change continues. The non-Annex I Parties insist on a UNFCCC Convention that states that developed countries should take the lead in combating climate change while Annex I Parties are requiring all nations to take part in combating climate change. Further complicating the issue are the conflicting interests within the two camps. While the Parties agreed to take part according to the Durban agreement, the level of participation is far from clear and both camps continue to stick to their old positions. Nothing more than a watered-down agreement can be expected out of Paris 2015, unless Parties adopt a new path of cooperation.

On a more fundamental front, it is quite safe to state that the reason behind the failures of the past 20 years is due largely to the absence of a sound process. COP21 therefore needs to focus on establishing a sound and legally binding process, instead of adopting old-style negotiation techniques that rely on a top-down approach. Given the fact that there has been little progress since 1992 and the fact that Parties are not willing to change their positions, common ground needs to be established in order for Paris 2015 to produce a meaningful outcome and one that meets the UN objective of protecting the environment.

One possible path towards a common ground where all Parties can participate is the use of a tier system, which will provide the required basis for all Parties to participate with differentiated responsibilities. As such, the UNFCCC can establish a process similar to that of reported INDCs, but on a larger scale and under certain nationally driven and binding conditions.

To support the effort by the UN to tackle unsatisfactory negotiating practices in previous years, the Tier Rating System (TRS) is the best path readily available for Parties wishing to keep costs low while being able to do business on a level playing field. It is proposed that a common but differentiated Tier System would include, but not be limited to the following primary factors:

- Economic development at the Party level
- Level of accumulated emissions
- Correlation between economic development and level of emissions
- Technology availability at the Party level
- Economic size and social development
- Resources for development
- Level of possible economic diversification
- Type of diversification (horizontal vs. vertical)
- Multi-resources economy and single-resource economy
- Other related issues

Additional factors determining ratings within a tier would include:

- Level at which mitigation and adaptation co-exist
- Intentional policy of commodities discrimination
- Spillovers within and across Parties
- Project financing
- Trade effects
- Other relevant factors

These primary factors will guide Parties towards reliable, affordable, sustainable and viable development, taking into account any special circumstances of each Party (or group of Parties sharing similar characteristics). To ensure a comprehensive engagement, a four-tier system is proposed with the most developed nations called upon to take the lead but with the very least developed nations also contributing to the intended UN objective. The four-tier system would be designed in such a way to allow developed nations to continue to benefit and developing nations to work towards their development at an increasing rate of contribution as they develop, ensuring an overall downward movement in GHG emissions, taking into account the level of development within each tier.

Bottom-up vs. top-down approach

In the world of modelling, there are several possible approaches, but the discussion here will focus on three: top-down, bottom-up and hybrid, the latter of which is a mixture of the first two. The top-down approach has been the model used in previous years, with the aim to agree on common environmental policies. While there has been some progress, negotiations pertaining to climate change remain very much the same. It is not because countries do not care about the environment, but it is because of the fact that countries are different in terms of capacities, resources and needs.

It has proven to be nearly impossible, if not impossible to have some 200 officials agree on a common ground, let alone a common and legally binding text, under the top-down approach, due to the high level of heterogeneity among Parties to the Convention. As a result, the top-down approach has not gone far in achieving sound environmental results.

Instead of forcing policies from the top (as seen by many government officials), the bottom-up approach puts the power back into the hands of individual countries and their policy-makers as well as entities composing the civil society. For this reason, the process becomes more manageable since individual governments can work smoothly within the different entities who can contribute greatly to achieving sound results. Countries' self-empowerment, adaptation of the issues and sense of responsibility have made it possible to mobilise efforts to work individually to meet a common goal.

In the same way that countries have worked diligently to submit their INDCs, which involved the participation of many entities within the country, empowerment of the society of the individual Parties to the Convention is the fastest path towards the 2-1.5 degree Celsius goal. In this sense, the bottom-up approach needs to be inclusive of large and small businesses as well as households taking responsibility for addressing GHG emissions through personal choices in lifestyle. It has been reported that one-third of the food consumed in some countries ends up in waste, which contributes greatly to GHG emissions. In addition, the high consumption of red meat requires increasing the supply of cattle, which also contributes greatly to GHG emissions, just to name few examples.

The UNFCCC success need not to stop at the INDCs, but could go further and treat the INDC exercise as a first step towards full engagement of the whole community within a country. As such, any attempt at creating a hybrid model in which top-down elements are combined with bottom-up elements is highly likely to create a business as usual result for many years to come. Unless society (generally composed of government, businesses and households) at the country level is empowered and trusted to use available resources so as to actively participate in the drive towards a worldwide low-GHG economy, the success of the INDC exercise will be very hard to repeat, even under stringent top-down policies.

One should not be under the misapprehension that energy is the sole driver of a country's economic development and stability and that any disruption to its energy security will be catastrophic. As an extension, one needs to avoid locking the global society into a specific energy source or technology based on certain unachievable assumptions. A successful environmental vision must chart an energy security path that embraces all indigenous resources that can be utilised through innovative technologies. As pointed out by Nick Butler:

> At the moment low-carbon sources of supply, including nuclear and hydro, provide less than 10 per cent of global total energy supply. By 2040 on the International Energy Agency's new policies scenario, which is moderately optimistic about action on climate change, they still provide only 15 per cent. One day there should be a major technical breakthrough. But until then we cannot assume that any form of renewable supply is going to displace coal, oil and natural gas. Most long-term forecasts show that renewables will produce growing volumes of energy over the next 20 or 30 years but so will hydrocarbons. Both grow in a world

where, even with improving efficiency, total consumption keeps rising.[1]

It is therefore important to pursue clean, affordable, viable and sustainable sources of energy, which in turn provides global society with equal opportunity of access to energy as well as sustainable development and prosperity. As such, oil and gas will continue to be the main source of energy for the foreseeable future.

Process precedes policies

Although many pledges have been made over the years, little has been implemented. It is also important to recognise the fact that policies adopted by one administration may very well be dismantled by one that follows. In addition, one must acknowledge that business communities do not appreciate having policies and regulations dictated to them and need to be brought on-board as part of the solution and the decision-making toward low-GHG economy. As such, the process agreed to at COP21 is disseminated to public and private sectors at the country level to identify paths toward low-GHG activities that suit their sustainable development for the whole economy in question, through the country-designated national authority (DNA) to the UNFCCC, as will be detailed below.

In light of the discussion above, the following are major elements of the proposed process that can be followed to achieve a common ground towards a low-GHG economy at the least-cost possible and at the same time to ensure a smooth economic transition to becoming a developed economy, for those below such levels, as well as maintaining or up-scaling the quality of life in developed nations. The proposed process consists of the following four elements:

1. Bottom-up approach
   a. Households
   b. Small business
   c. Large corporation
   d. Government entities
   e. others
2. Localised (nationally driven) reporting
   a. Each entity will be assigned a designated reporting agency
   b. All reporting agencies will report to the designated national authority (DNA)
   c. DNA will report to the UNFCCC
3. Governance
   a. There is no one-size-fits-all model and accordingly each country will choose its economic category and development path that suits its special circumstances.
   b. Households and business communities are major contributors and must be engaged in the process of achieving low GHG emissions, through technology and know-how - not stringent regulations.
   c. Other relevant categories
4. GHG distribution
   a. Account for GHGs by type at the country/regional level
   b. Identify sources of GHGs at the country/regional level
   c. Identify measures taken by economies to reduce GHG emissions
   d. Other relevant activities.

Proposed process

Governments were able to achieve in less than a year what they could not achieve over 20 years of negotiation, once countries were given the choice to develop their own INDCs and according to their own circumstances. The bottom-up approach used by the UNFCCC has proven to be the best choice where Parties to the Convention assumed their responsibilities and urgently mobilised the required resources so as to provide their INDCs. Building on the success of the INDCs, the UNFCCC may choose to pursue a broader bottom-up approach so that movement towards the 2 degree or even 1.5 degree Celsius goal is accelerated. For a sound outcome at Paris, the following thoughts summarise a 14-step process that would allow Parties to be both

[1] Nick Butler, "Climate change and the myth of stranded assets", *Financial Times*, 28 September 2015 (http://blogs.ft.com/nick-butler/2015/09/28/climate-change-and-the-myth-of-stranded-assets).

empowered and to take responsibility in meeting their commitments toward climate change.

1. Parties to the Convention should submit full information to the UNFCCC via their Designated National Authority (DNA). Developed nations are to provide the required support, financial or otherwise to countries that do not have an established DNA. Developing countries in a position to provide such support are urged to do so as well.
2. Parties to the Convention should agree to report through their DNAs the existence types of gases, in accordance with the "Kyoto 6 gases" definition.
3. Parties to the Convention should agree to report through their DNAs on the state of their efficiency programs and related future plans, in accordance with the individual countries' INDC submissions.
4. Parties to the Convention should agree to report on the well-developed parts of their economies and those that need to be further developed, with specifics on the type of diversification required (horizontal and vertical).
5. Parties to the Convention should agree to report on statistics pertaining to households, including the number of households, size, food type and food consumption and associated waste that leads to GHG emissions as well as the level of estimated GHGs from such wastes.
6. Parties to the Convention should agree to report on business contributions to the country's GHG pool, identifying small, medium and large corporations.
7. Parties to the Convention should agree to report on agricultural products and estimated GHGs emanating from the sector. Accurate reporting on exports and imports to and from different destinations are key to obtaining better estimates of GHS emissions.
8. Parties to the Convention should agree to report on existing or planned efforts to raise awareness about climate change and required measures accessible to the public of a country.
9. Parties to the Convention should agree to report on technological innovations that can be employed to curtail or reduce GHG emissions and the degree to which use of such technology can be utilised by other Parties to the Convention.
10. Parties to the Convention should agree to submit reports at least two months before the next COP.
11. Parties to the Convention should agree that the DNA is the entity responsible for reporting and communicating with UNFCCC and all reports are nationally determined without any outside pressure.
12. Parties to the Convention should agree to work together using submitted information to move towards a low-GHG economy through technology, knowledge-sharing and market mechanisms without discrimination amongst resources so as to avoid market distortion.
13. Parties to the Convention should agree that submission of the process elements through their DNA as stated and agreed to are legally binding.
14. The UNFCCC should maximise the level of heterogeneity in line with the INDCs to ensure inclusivity as well as to ensure accounting for country-specific needs.

Action Plan

Based on their choice of tier, Parties should agree to report their economic development paths by 2020, in accordance with the four-tier system.

1. Commitments by developed economy Parties

a. Extend financial and technical aid to developing and least developed economies

b. Meet their GHG reduction target and refrain from activities within national borders or other developed borders that contribute to increasing GHGs

c. In the event that sustainable development requires engagement in activities that may result into increasing GHG emissions, such nation may pursue such activities in collaboration with developing or least developed nations on a bilateral basis (joint credit mechanism) and claim all or part of GHG credit

d. Agree to share best practices, know-how and technologies with developing nations in accordance with market practices and without taking advantage of their needs

e. Report on their declining level of GHGs every five years with annual update starting 2025

2. *Commitments by emerging economy Parties*

a. Reduce their GHG emissions in accordance with their INDCs and to report on their economic development activities and sources of GHGs, starting 2020

b. Be willing to extend aid, financial or otherwise to least developed economies

c. Share best practices and provide access to know how and technologies with developing and least developed economies

d. In the event that sustainable development requires engagement in activities that may result into increasing GHGs, such nation may pursue such activities in collaboration with developing or least developed nations on a bilateral basis (joint credit mechanism) and claim all or part of GHG credit

e. Report on their declining level of GHGs every five years with annual update starting 2025

3. *Commitments by developing economy Parties*

a. Report on their economic development that is likely to result in GHG increases and report on level of reduction/ avoidance from business as usual cases due to their chosen path of development, with updates every five years

b. Report on efficiency programmes and other means followed to minimise GHGs through their needed developments

c. Engage in bilateral cooperation with both developed and emerging economies nations in project development sharing any GHG credits so as to accelerate low GHG development as well as accelerate the drive toward below 2 degrees C

d. Report on their economic diversification paths by 2020 and on their diversification development by 2025, with emphasis on type of diversification and the degree of needs for such choice

e. Report on their programmes aimed at reducing/avoidance of GHGs from business as usual and identify clearly conditions under which development achievements are constrained

f. Report on their progress toward complete development and levels of cooperation with developed and emerging economies as well as reporting on the level of technologies and know how being adopted from better developed economies.

4. *Commitments by LDC Parties*

a. Use funds received from more developed Parties to invest in developing their economies on the basis of agreed bilateral cooperation

b. Employ their indigenous resources using best available technologies and practices so as to achieve highest possible development paths toward low GHG economies

c. Report on their progress toward developing economy status and levels of cooperation with developed, emerging and developing economies as well as report on the level of technologies and know-how being adopted from better developed economies.

Co-integration of GHG reduction and sustainable development

The key to success in Paris 2015 will be the degree to which nations are willing to work together towards the same objectives. Central to achieving the common objective of tackling climate change is attaining clarity on the various paths to development. The Ricardian Model can easily be extended to include the special circumstances of Parties to the Convention, such as including well developed economies with high levels of GHG emissions as one of the constraints. The flow of goods, services, technology and know-how will accelerate the transition of LDCs to the developing-country level, developing and emerging economies to the developed level, and developed economies to even higher standards of living and access to clean energy for the more than 3.5 billion people currently lacking access to electricity or clean cooking energy.

The grouping of countries[2] presented below may be used to facilitate an understanding of the proposed method, where cross-countries' common and heterogeneous properties can be examined through hybrid co-integrated Computable General Equilibrium Modelling (CGEM) and spatial analyses. In addition, the joint credit mechanism (JCM) can serve as the basis for investment, trade and transfer of technology opportunities across Parties to the Convention in the framework of four broader tiers:

1. *Developed economies*

   a. *Status.* Characterised by well-established infrastructure for the production of goods and services that meet high standards on all levels, fuelled by first-class technology development and know-how; the ability to develop and deploy high-end technology for their own development and for export to other economies; major exporter of final and intermediate goods; highly stable economic system ensuring sustainable development at lower environmental costs compared to other economies in its class.

   b. *Past and future emissions path.* While their industrial development was based on high GHG emissions, such economies have reached their emissions peak and are capable of achieving sustainable economic growth at sustainably declining GHG emissions rates, given their technological advancements. Hence these economies are capable of making large emissions reductions at low cost. In addition, reduction in GHG emissions and technology advancements will provide support to sustainable development through trade.

   c. *Applicable policies*. To ensure sustainable development with the greatest gains addressing mitigation and adaptation, policies need to be linked to technology so as to utilise available natural resources and minimise risk of within and cross-border spillover impacts. Deployment of technology and know-how to own economy is a major source of gains in terms of efficiency and trade in goods and services as well as GHG credits based on a sound GHG pricing system. In addition, the export of technology and know-how is another source of value added to GDP. These economies have well-developed markets and well-functioning institutions, hence market-based policies will be appropriate. Also, given their geographical location, technology and economic resilience, these countries are less vulnerable to climate impacts and hence the focus of policies in these countries is on mitigation with very little interest on adaptation. Countries in this category will be able to expand their trade base through investment in developing and least developed countries.

2. *Emerging economies (semi-mature*)

   a. *Status*. Characterised by fairly well established infrastructure for production of goods and services based on above-average technology development and know-how. An economy at such a level and with the ability to develop as well as to deploy high-end technology to its own development and for export to other economies has the ability of sustainable

[2] In mathematical language, the 196 x 196 matrix will help identify cooperation opportunities between Parties.

development but at higher environmental costs, compared with well developed economies. As such, a semi-mature economy is said to be able to reach the level of well-developed economy in a reasonable timeframe ranging between 10-15 years.

b. *Past and future emissions path*. Followed the same path as that of a well-developed economy, but has the advantage of being able to develop and deploy technology in a shorter time span; hence its path to development is shorter than that of the previous group. Its GHG emissions are expected to grow at a declining rate reaching the level of a well-developed economy in 10 to 15 years, at which time a peak will be reached and trade advantages will commence.

c. *Applicable policies*. To ensure sustainable development at the least possible environmental cost and that address mitigation and adaptation, policies need to be linked to technology so as to utilise available natural resources and to minimise the risk of within and cross- border spillover impacts. For such an economy to achieve its goals within the given time span, available, affordable, viable and sustainable sources of energy must be targeted in a stepwise fashion so as to ensure transition to a well-developed economy whereby its peak in GHG emissions coincides with or precedes the transition point in time. The policy emphasis in this group of economies is divided between mitigation and adaptation. The mitigation component of the policy will focus on energy efficiency and targets reducing GHG intensities in the short run and actual GHG emissions in the long run. Markets could play a role in mitigation for this group of economies, but it is likely to be limited in the short run given the level of development of their markets and their experience with emissions trading.

3. *Developing economies*

a. *Status*. Characterised by acceptable established infrastructure for the production of goods and services based on imported technology and know-how. Economies in this class can only achieve sustainable economic development through an S curve function type of growth and are at or below the inflection point at which the economy exerts a sharp demand for raw and intermediate goods as well as technology and know-how importation, which necessitates higher environmental costs. As such, a less than semi-mature economy is said to be able to reach the level of GHG emissions growth at a decreasing rate in a reasonable timeframe ranging between 25-30 years, if and only if full utilisation of natural resources as well as availability of advanced technology and know-how are deployed for economic development.

b. *Past and future emissions path*. Followed the same path as a semi-developed economy but far below that of a developed one. Its GHG emissions are expected to grow substantially before entering a stage of GHG emissions growth at a declining rate, in 25-30 years. Economies in this class will continue to be at a disadvantage in term of GHG trading until their GHG emissions peak is reached, at which time such economies will enter the GHG trading market. Transfer of technology and know-how are prerequisite for curtailing GHG emissions growth and the transition to becoming a developed economy.

c. *Applicable policies*. To ensure sustainable development at the least possible environmental cost that addresses mitigation and adaptation, policies need to be linked to technology so as to utilise available natural resources and minimise risk of within and cross-border spillover impacts. For such an economy to achieve its goals within the given time span, available, affordable, viable and sustainable sources of energy must be targeted in a stepwise fashion so as to ensure its transition to a well-developed economy whereby the peak in GHG emissions coincides with or precedes the transition point of time. Policies have to account for the needed sustainable development through environmental costs offsets provided by developed and semi-mature emerging economies. The policy focus in this group will mainly be on adaptation while mitigation impacts can only be side products to adaptation. Policies aiming at strengthening economic resilience, such as economic diversification, will have special appeal. Given the level of market development and the functioning of institutions in this group, market-based mechanisms and tools will be

limited and tools involving technological solutions are more effective and hence will have priority.

4. *Least-developed economies*

a. *Status*. Characterised by fairly low or very poorly established infrastructures for production of goods and services. An economy at such level and with no ability to develop on its own will continue to be concerned with meeting the immediate needs through basic means of natural resources utilisation and aid from more developed economies. An economy in this class is said to require a significantly longer time span to reach the level of a developing economy.

b. *Past and future emissions path*. This class of economies is the lowest producer of GHG emissions and will continue to be so for quite some time, unless developed economies or those in a position to support such poor economies increase investment and contribute to their development. Economies in this class may benefit from GHG emissions trading, but it has to be for development to ensure fulfilling their moral social and environmental responsibilities.

c. *Applicable policies*. To promote sustainable development at the least possible environmental costs that address mitigation and adaptation, policies need to be linked to building required infrastructure and utilising available natural resources. Policies have to account for the needed sustainable development through investment and GHG trading without putting such poor economies at a disadvantage, both economically and environmentally. Policies targeting planned adaptation have priority with particular emphasis on strengthening social safety nets.

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