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Briefing requested by the LDC Chair

Intended Nationally-Determined Contributions (INDCs): Opportunity for Nepal

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Executive Summary

The 2013 Warsaw Conference of the Parties (COP19) to the United Nations Framework Convention on Climate Change (UNFCCC) invited all Parties to initiate or intensify domestic preparations for their intended nationally determined contributions (INDCs) in the context of the 2015 agreement. The COP-19 agreed that these contributions should be communicated well in advance of COP-21 in December 2015, preferably by the first quarter of 2015 by Parties ready to do so.

The Least Developed Countries (LDCs) are most vulnerable to climate change and are currently already facing adverse climate effects. The LDCs' negotiation position is one that calls for strong global climate action, and the group is therefore demanding a binding climate treaty that engages all Parties in ambitious mitigation action and ensures international cooperation on adaptation, finance and other means of implementation to provide effective support to the most vulnerable countries.

While international negotiations make progress toward greater clarity regarding the concept of INDCs, several countries are already engaging in domestic preparations. The LDC Group has stated that it is of utmost importance for all Parties to join the agreement and to make an effort to include mitigation elements in their contributions. The group states that while adaptation and means of implementation are important parts of the 2015 Agreement and should have the same level of political priority, they should be treated separately from mitigation.

Nepal, current Chair of the LDC Group at the UNFCCC climate change negotiations to end of 2014, takes on a forerunner role and has the responsibility to voice concerns of countries in the Group. Nepal can present itself as a model for all other LDCs by outlining what a contribution can mean for the LDCs in the context of the 2015 agreement. Such contributions should not add an extra burden to countries less capable to cope with climate change due to their development status, who already face huge challenges to deal with other problems, such as poverty eradication. Instead, INDCs should provide strong and moral obligations for more capable countries to act.

In Nepal, GHG emissions are primarily driven by the agricultural sector, which in 2010 accounted for roughly 70% of their total GHG emissions. In contrast, the share of CO₂ emissions is relatively small, only 14%. The electricity sector is basically carbon neutral, as it relies almost entirely on hydropower generation (IEA 2013). Forest coverage in Nepal has remained constant between 2005 and 2011 (World Bank, WDI Indicators) showing a low deforestation and degradation trend. Nepal's INDCs could include policies and measures that continue the current mitigation initiatives beyond 2020. With further support, Nepal's abatement potential can be implemented in sectors such as agriculture, energy and forestry.

There are a number of multilateral and bilateral programmes to support countries in formulating and implementing their INDCs. The technical assistance provided under these programmes includes 1) In-depth analyses of high mitigation options with a view to assess the mitigation potential in key sectors, as well as the costs and implications associated with their implementation, 2) Stakeholders consultations, and 3) Activities to mobilise political endorsement.

It is expected that Nepal could take advantage of one of these programmes with a view to present its INDCs well in advance of COP20 in Paris, demonstrating real leadership for climate action.

1. A short history of the UNFCCC process

The United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1992, aims to stabilise GHG concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system (Article 2 of the UNFCCC). The Convention sets no mandatory limits on GHG emissions for individual Parties and contains no enforcement provisions. Accordingly, it is considered to be a legally non-binding agreement.

To complement the provisions of the Convention, the Parties to the UNFCCC in 1997 adopted the Kyoto Protocol (KP). The KP, which entered into force in 2005, committed 37 industrialized countries and the European Community to reduce their GHG emissions to an average of 5% below 1990 levels. Even though the Kyoto Protocol was an important step in global climate diplomacy, it was by far not effective enough when it came to bringing together all the major emitters and reducing emissions to such a degree that it would prevent dangerous anthropogenic climate change.

At the fifteenth Conference of the Parties to the UNFCCC (COP15) in Copenhagen in 2009, the Parties failed to reach an agreement on a post-2012 agreement, which should have engaged both Annex I and non-Annex I¹ Parties to the Convention in a collaborative effort to enhance the effective implementation of the Convention in a differentiated manner. In the Copenhagen Accord and, subsequently, at COP16 in Cancun in 2010, Parties took note of the economy-wide emission reduction targets communicated by developed countries and of the nationally appropriate mitigation actions (NAMAs) communicated by developing countries submitted under the Convention for the period 2013-2020.

2. Background on the Intended Nationally Determined Contributions (INDC)

The aggregate efforts envisaged by the Parties by 2020 (both under a second KP commitment period and in the pledges under the Convention) do not suffice to hold global temperature increase below 2°C by the end of the century. The emissions gap in 2020 between projected emissions with current pledges and the 2°C target is in the range of 8-12 GtCO₂-eq (UNEP 2013). Thus, efforts currently envisaged by the Parties by 2020 will be insufficient to prevent dangerous climate change. The current negotiations have still not succeeded in establishing a mechanism, which would ensure sufficient pledges and commitments. They also still need to adopt formal procedures for ex-ante and ex-post reviews of pledges and targets, as well as for subsequent rounds of mitigation pledges after 2020.

At the seventeenth conference of Parties (COP17) in Durban in 2011, Parties finally reached agreement to establish a process under the newly established Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP). While stipulating collaboration toward the most ambitious action to close the mitigation gap by 2020, the ADP envisages that a protocol, another legal instrument, or an agreed outcome with legal force under the Convention applicable to all Parties, shall be adopted by 2015 and implemented by 2020.

¹ The UNFCCC groups Parties into Annex I (developed countries) and non-Annex I countries. To more concretely define commitments and demonstrate ambition, the Kyoto Protocol in 1997 set quantified economy-wide emission limitations or reduction targets for a limited number of countries - developed countries and economies in transition, classified as the Annex B countries of the Kyoto Protocol. With some exemptions, Annex I of the Convention and Annex B of the Kyoto Protocol contain the same countries.

In 2013, at the nineteenth conference of Parties (COP19) in Warsaw, countries took an important decision under the ADP (Decision 1/CP.19), which aims at advancing the development of a new climate treaty. The decision invites all Parties to initiate or intensify domestic preparations for their intended nationally determined contributions (INDCs), without prejudice to the legal nature of the contributions. These INDCs, which are to be submitted in the context of the 2015 agreement, should be communicated well in advance of COP21 in December 2015, ideally by the first quarter of 2015 by those Parties ready to do so. The same decision requested the ADP to identify, by COP20 in Lima in 2014, the information that Parties need to provide when putting forward their contributions.

During the first half of 2014, Parties were engaged in discussions enhancing their understanding of the concept of INDCs. Various views exist particularly with regard to the scope of the INDCs, their legal status and on how they should be treated once Parties present them.

- On the scope, the main issues relate to whether the concept of the INDCs should only cover mitigation contributions of all Parties with the intention to collectively limit the causes of climate change or whether the INDCs should also cover other elements including adaptation, finance, technology and capacity building.
- On the legal status, Parties' views diverge with regard to whether the quantified or quantifiable numbers associated with the respective INDCs should be legally binding or not, and whether they should be driven by an international agreement or by national legislations.
- The question of how the INDCs should be treated once formulated is closely associated with their potential review in an ex-ante assessment phase. Here also Parties' perceptions vary on the purpose of such assessment and on the extent to which it should be made:
 - Should it be limited to the consideration of information provided by Parties to facilitate other Parties' understanding of their contribution?
 - Should the fairness, comparability and adequacy of these contributions be assessed?
 - Will any adjustment be envisaged to ensure the adequacy of contributions, individually and/or collectively toward a global goal?
 - Still, the outcome of the ADP 2-5 meeting in Bonn in June 2014 leaves open the question of whether, when and how the adequacy of the countries' contributions should be reviewed.

In preparation for the ADP session 2-6 in October 2014 in Bonn, the ADP Co-chairs issued the following documents in which they present their own views and summarise the views of Parties, with the goal of demonstrating progress made to date under the ADP, while setting a strong foundation for a successful agreement next year in Paris:

- An informal note on reflections on progress made at the ADP 2-5
- A non-paper on Parties' views and proposals on the elements for a draft negotiating text
- A draft text for Parties' intended nationally determined contributions in the context of the 2015 agreement
- A draft text on accelerating the implementation of enhanced pre-2020 climate action
- A scenario on the organisation of the work at the session

Parties at ADP 2-6 will consider these documents. More clarity on elements of the draft negotiation text and on ex-ante information required for the INDCs to be agreed by COP20 in Lima is mostly expected. The Lima decision should make the necessary provisions to ensure that INDCs are transparent, comparable and adequate, by:

- Clarifying the information that countries should provide when submitting their INDCs.
- Setting up a process for assessing and periodically reviewing the emissions reductions associated with these INDCs, as well as their overall contribution toward a global goal of limiting temperature below 1,5°C by the end of the century, as called for by the LDCs.

In the context of this important negotiation, Nepal as the Chair of the LDC Group at the UNFCCC (for the year 2013 and 2014) has the high responsibility to come forward and voice the concerns of all LDCs that expect to be adversely affected by climate change and that currently already

struggle with some of the effects. By outlining what a LDC's contribution in the context of the 2015 agreement could look like, Nepal can present itself as a model for all other LDCs. Such contributions should not add extra burdens to countries whose capacity to deal with climate change is already low and who are facing other huge challenges, such as poverty reduction. Instead, LDC INDCs should provide strong and moral obligations for more capable countries to act. Such a model will help other countries to initiate discussions at the country level about the preparation of their INDC.

This briefing, whilst focused on Nepal, aims to inform policy makers and climate change negotiators about INDCs in general. Furthermore, the document supports the preparation of INDCs for Nepal in the run up to the 2015 agreement. And, lastly, the proposed approach could also serve as a framework to support other countries with similar characteristics in determining and formulating their INDCs.

This briefing incorporates information from an LDC perspective on the negotiations related to the formulation of an INDC, including considerations of the question of how key elements for a contribution by an LDC can be determined. To answer what Nepal's INDCs could include, this paper discusses potential approaches to Nepal's INDC, its policy frameworks and options to be considered regarding the formulation of an INDC. Finally, it offers a number of policy recommendations for Nepali decision makers.

3. Least Developed Countries' perspectives on INDC-related negotiations

According to the LDC Group's submissions and their stated positions during the ADP negotiations, the 2015 climate agreement currently under negotiation should create the conditions for an effective international response to tackle climate change over time. It will require universal participation, high ambition and rules, as well as a compliance system to ensure environmental integrity and durability. Furthermore, a multilateral oversight is needed to better track the implementation of commitments, to ensure that the ambition gap is bridged and that the world is led on a pathway that holds warming well below a 2°C increase above preindustrial values, and returned to a 1.5°C increase above preindustrial by 2100.

The new agreement needs to ensure that the mitigation effort collectively required from Parties is based on, and in accordance with, latest scientific findings. Therefore, there is a need to ensure that Parties' individual contributions to this collective effort are consistent with this scientifically-determined aggregated effort level.

While the discussions regarding the structure and elements of the agreement are progressing at a slow pace, it is indisputable that the negotiations on the INDCs play an important role in defining the scope of the new climate agreement. The INDCs are expected to serve as a basis for future mitigation commitments for the 2015 agreement, if the Parties agree that all or some countries should make binding commitments under the new treaty. The limited time leading up to the Lima climate conference in December 2014, is crucial to resolve a number of unclear issues regarding the INDCs.

Several procedural discussions undermined the progress on both the structure and elements of the 2015 agreement; including a discussion on sequencing. Many Parties share the perception that the INDCs come first and then the agreement. Other Parties, however, argue that such a sequence would undermine the possibility for trade-offs that would ensure that all the elements of the agreement, in particular adaptation, the provision of finance and other means of implementation, receive sufficient consideration.

There was broad consensus during the ADP 2-4 session in March 2014, that the INDCs would need to be differentiated among Parties. Nevertheless, there was the usual divergence regarding the rationale for differentiation of the INDCs according to different types of countries and how this

differentiation would be implemented. In general, many Parties reemphasised the decision in Warsaw that the INDCs should – as their name suggests – be developed according to the national circumstances of each Party. At the same time, however, they also stressed that Parties should not be able to arbitrarily determine their INDCs.

During the ADP sessions in March and June 2014, there was wide recognition among Parties that, based on the principles of the Convention, the vulnerability and limited capability of the LDCs and the Small Island Developing States (SIDS) needed to be reflected in the differentiation mechanism. Future talks toward the adoption of a post-2020 agreement in Paris need to reinforce these considerations. The forthcoming talks will need to continue to resolve the highly polarised issue of how INDCs should be differentiated between Parties in general. They should also centre on the future of the “firewall” between the current classification of developed and developing countries based on the Convention Annexes, while providing further clarity on the scope and purpose of the INDCs.

3.1. Scope of INDCs

While many Parties believe contributions should cover mitigation, adaptation and the means of implementation such as finance, capacity building and technology, the LDCs, together with SIDS, EU and few other countries stated during the last June session that INDCs should only, or at least primarily, cover mitigation contributions. The Group’s initial position supports a narrow scope for INDCs, focused on mitigation. But in view of working toward consensus, the Group agreed that it was of utmost importance that all Parties joined the agreement and that an effort was made to produce in their contributions under the theme of mitigation. However, the LDC Group believes that adaptation and means of implementation are also important parts of the 2015 agreement. While these issues should have the same level of political priority, they should be treated separately from mitigation.

3.2. Adaptation

The LDC Group believes that adaptation should be a core element of the 2015 agreement, but not necessary in a form of INDCs. The Group considers adaptation as an additional burden for the respective countries, and, therefore, support for adaptation measures is a right. Furthermore, the Group believes that including adaptation in the INDCs would create an additional reporting burden for them, and that the formulation of NAPs already represents an established way to identify medium and long-term adaptation needs and priorities. Inclusion of adaptation in the INDCs would imply a pre-conditioning for adaptation finance and would also constitute a distraction from what should be the main purpose of INDCs, namely to ensure that we embark on a mitigation pathway that will limit global temperature increase to below 1.5°C relative to pre-industrial levels.

3.3. Finance

The LDC Group stated that finance must be part of the 2015 agreement. The Group stresses importance of establishing a process for developed countries to commit to new and additional finance they will bring into the new 2015 agreement, while encouraging the efforts of a larger group of contributing countries. These additional financial commitments for the new agreement should be subject to an ex-ante review prior to COP20 in Paris, so that the level of finance provided is commensurate with the support needed to meet the mitigation, adaptation, loss and damage, technology development and transfer and capacity building needs.

Against this backdrop, many of the LDCs are already taking vigorous action to address climate change. Nine LDCs have submitted Nationally Appropriate Mitigation Actions (NAMAs) and twelve of them already have low carbon resilient development strategies in place. This provides a snapshot of what the most vulnerable countries are willing to do to support strong global climate action despite the fact that they are struggling with many other internal problems.

3.4. Types of commitments

Regarding the various types of commitments (absolute or relative economy-wide and sectorial targets, activity based targets, policies and regulatory instruments, programmes and projects), the LDCs believe that these commitments should be designed in a way to accommodate various capabilities and vulnerabilities. Regarding the commitments, no backsliding for countries should be allowed. For the Annex I countries this means that they cannot be allowed to present relative targets as most of them have already taken on absolute economy-wide targets under the Kyoto Protocol. Similarly, all developing countries should strive for contributions or commitments that are stronger than what they have communicated under the pre-2020 period.

Moreover, all Parties should continuously strive to improve their contributions over time and take stronger commitments as capabilities evolve. The LDC Group also believes that developing country Parties have an important mitigation role, while respecting the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC). While some developing countries should take on relative economy-wide emission targets, possible types of targets that many other developing country Parties might propose include both:

- Result-based commitments focusing on different types of targets including energy intensity targets, renewable energy targets (share of electricity generation or installed capacity) and technology targets; and
- Activity-based commitments, like emissions price commitments, technology standards or packages of policies and measures.

3.5. Date of submission

Regarding the preferred date for INDC submission, the first quarter of 2015, and the group's ability to present INDCs, there is a consensus in the Group that the capacity to produce INDCs would depend on international support provided to LDCs for their domestic preparation. In this respect, the particular circumstances of LDCs should be reflected. Least developed countries like Nepal will require special financial and technical support to enable the country to present INDCs in 2015. Therefore, a decision in Lima should clarify the support already available, or available in the near future. The Group called for the establishment of clear milestones to ensure that the work leads to a comprehensive outcome in Paris in 2015. There should be a review process to assess the adequacy of the aggregate proposals, and a process to adjust contributions as appropriate in order to achieve the ultimate objective of the Convention and to be in line with the latest scientific findings.

4. Considerations for Nepal's INDCs

This section presents firstly an overview of climate change issues in Nepal attesting the country's extreme vulnerability and makes the case for Nepal as for all the least developed countries to call for strong global climate change action, involving ambitious mitigation efforts by all countries as well as strong international cooperation efforts to support effective adaptation in countries that need it the most. Secondly, it analyses potential policy options for mitigating GHG emissions in Nepal.

4.1. Overview of climate change issues in Nepal

Several studies show that countries such as Nepal are highly vulnerable to climate change. This has been demonstrated by both the observed and the projected trends in climatic variables as well as the limitations of adaptation capacity.

4.1.1. Precipitation

Nepal is characterised by precipitation patterns that vary strongly according to seasons. More than 80% of precipitation occur during the monsoon period (Malla, 2008). Climate models commonly agree that, on one hand, climate change fosters an increase precipitation during the Monsoon period in June and August, while reducing rainfall during the period between December and February on the other. Overall, this implies a reduction of annual precipitation in Nepal (Agrawala, 2005). Therefore, climate change tends to exacerbate Nepal's dependence on hydro storage reservoirs to cope with the seasonal rainfall variability. Another issue that may exacerbate in light of an increase in the variability in water stream flows, relates to power shortages.

4.1.2. Temperature rise

Nepal is expected to see a disproportionate rise in local temperatures compared to the global average increase. This disproportionate increase in temperature, which is projected to reach 1.2°C in 2030 (Agrawala, 2005), is increasing the probability of glacial retreats and glacial lake outburst floods² (Richardson and Reynolds, 2000), and, thus, poses a major threat to several sectors, including Nepal's hydropower facilities. In 1985, for example, floods destroyed a hydro project worth \$ 1 million causing major damage to existing energy infrastructure.

Potential damage to hydropower facilities can be prevented through adaptation measures such as flood control measures, drainage channels, or the conscious selection of low risk hydropower locations. Some adaptation measures have already been embraced in order to the catastrophic effects of adverse climate impacts. In the course of a Risk Reduction Project worth US\$3.2 million the level of the Tsho Rolpa glacier lake has been lowered through drainage. Further, an early warning system has been set up in 19 villages (Mool et al., 2001; Shrestha and Shrestha, 2004).

Finally, global warming is expected to have a mixed impact on Nepal's agricultural sector. The crop simulation model (DSSAT) shows a positive effect in yield of rice and wheat, but a detrimental effect in the maize yield, especially in the Terai region (Malla, 2008).

4.2. The emission and mitigation potential of key sectors

4.2.1. Agriculture

GHG emissions in Nepal are primarily driven by the agricultural sector, which in 2010 accounted for roughly 70% of GHG emissions. The sector is also pivotal for Nepal's economy, as it accounts for one third of the total value added³. Methane (CH₄) releases by rice cultivation and enteric fermentation are identified as major sources of GHG emissions.

In contrast, the contribution of CO₂ emissions is with 14% of total GHG emissions relatively small. Therefore, when developing mitigation policies that aim to reduce global warming, Nepali policymakers need to take into consideration the agricultural sector.

4.2.2. Energy Access

Hydropower is Nepal's primary source of energy. Driven by the increased use of oil and coal/ peat for road transport and manufacturing industries respectively, Nepal has witnessed an increase in the carbon content of its energy, which has caused a sharp growth in CO₂ emissions over the last two decades. However, Nepal's electricity sector is basically carbon neutral, as it relies almost entirely on hydropower generation (IEA, 2013).

Due to the country's underdeveloped electricity grid, only a part of Nepal's population has regular access to electricity. While on average 40% of the population has access to electricity, this rate can be as low as 29% in rural areas, where 80% of the total population resides (Khanal et al. 2011). Moreover, this lack of electricity access is correlated with the high share of the population living in

² The paper by Richardson and Reynolds, which focuses on the regions of Tibet, Nepal and Bhutan, found that the frequency of glacial lake outburst floods increased from 0.38 events per year in the 1950s to 0.54 events per year in the 1990s.

³ The country also relies heavily on workers remittances, which in 2014 are projected to reach 30% of total GDP (World Bank, 2014).

poverty. In 2003, 77.3% of the population was living in poverty. This figure decreased to 56% in 2010 (WDI Indicators⁴). Malla (2013) finds that the current level of energy access in Nepal is below the basic human needs, and identifies the need for innovative and coordinated policies on part of Nepal's government.

Traditional energy sources, such as animal dung, fuel wood and crop residues, account for 86% of Nepal's energy consumption (AEPC, 2013). Woody biomass, which is primarily harvested from forests, accounts for roughly 77% of total energy consumption in Nepal and is particularly crucial for the rural population. According to Practical Action (2010) Nepal's rural population spend on average 2.5 hours per day on wood collection (Rasuwa District, Nepal). Yet, an improvement in economic conditions in Nepal's rural areas is not thought to significantly reduce firewood collection (Baland et al., 2010). Conversely, firewood consumption was found to be sensitive to the price of other energy substitutes, in particular kerosene (Baland et al. 2007). Whilst woody biomass is cheaper compared to modern energy sources, it can lead to air pollution and respiratory illnesses, the associated health costs of which are generally ignored by the local population (Pant 2007).

Figure 1: Access to electricity versus poverty levels

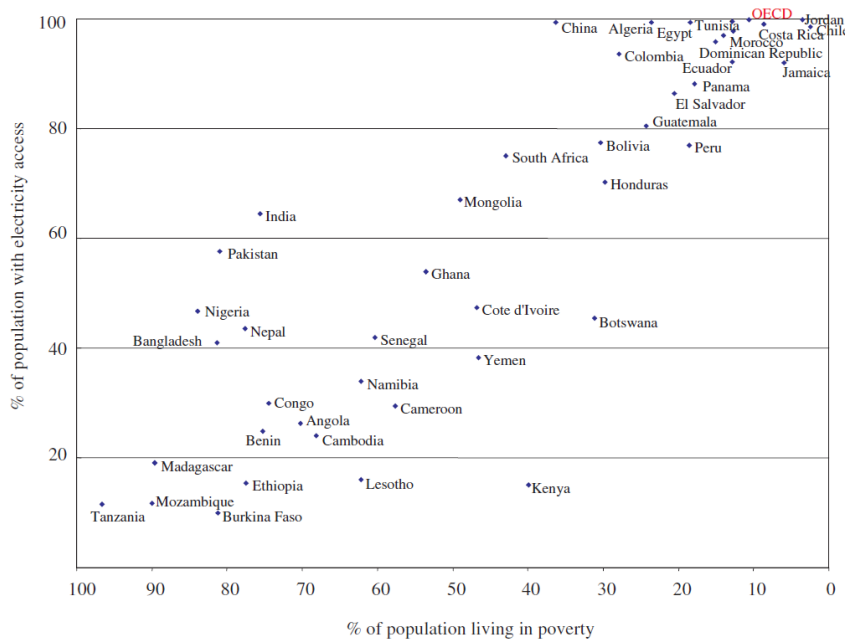


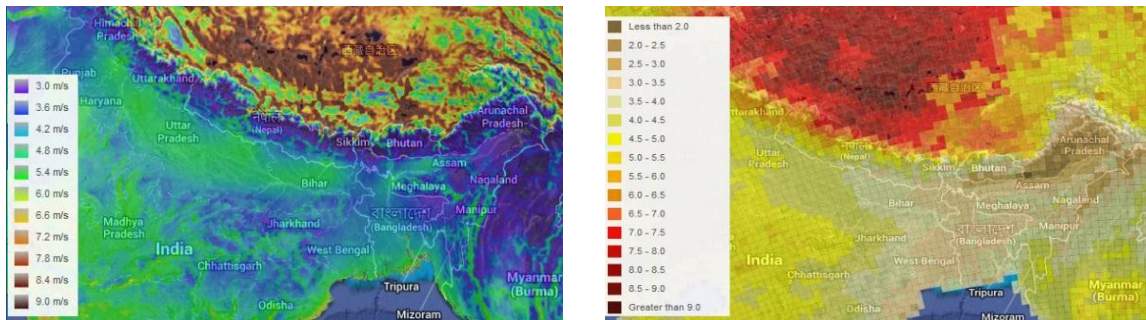
Figure 2.7 | Access to electricity versus poverty levels. Source: adapted from World Bank, 2011a; IEA, 2008.

Source: GEA, 2012

In order to reduce energy poverty, the Nepalese Government in 1996, launched the Rural Energy Development Program (REDP). As of July 2012, this resulted in 3.24 MW of installed mini-hydro power plants (AEPC, 2013). In this context, it is also worth mentioning that even though hydropower is already Nepal's primary electricity source, so far less than 2% of its identified commercial potential (42 GW) have been deployed (source: Surendra et al. 2011).

⁴ <http://data.worldbank.org/data-catalog/world-development-indicators>, accessed on 20 October 2014.

Figure 2 – Wind (left hand side) and Solar (right hand side) potential in Nepal.



Source: IRENA - Global Atlas

Enhancing the country’s electrical power grid remains a challenge, because of steep terrains and scattered settlements (Khanal et al., 2011). Since the cost of expanding the power grid is relatively high, distributed sources of energy have an advantage compared to a centralised energy system. However, solar Photovoltaic (PV) is still not perceived to be an attractive technology by the rural population (Mainali and Silveira, 2012), because of the limited access to credit and high upfront costs. Despite an estimated commercial potential of 300 MW, wind energy is also not deployed in Nepal because suitable locations are mostly found in mountainous terrains and unconnected to the country’s infrastructure (Surendra et al 2011). Figure 2 shows the average wind speed in Nepal at 80 meters units as well as the country’s solar potential with a direct normal irradiance of 40km.

4.2.3. Deforestation

Currently 25.4% of Nepal’s surface area is covered by forests (WDI indicators, 2012 data). The size of forested areas has remained constant between 2005 and 2011 (World Bank, WDI Indicators), which is indicative of a low deforestation and degradation trend but, compared to 1950, Nepal’s forest cover has diminished considerably, partly as a result of the nationalisation of Nepal’s forests in 1957. The drivers of deforestation in Nepal are very diverse, complex and site-specific, which can partly be attributed to socio-cultural differences (UNDP, 2013): in the Terai region illegal logging, encroachment and timber smuggling are the main drivers of deforestation; while in the hills road constructions and wood collection, and in the mountain regions, illegal logging and wood collection are identified as the main sources of deforestation (UNDP, 2013). Other causes of deforestation were the lack of tenurial clarity, the agricultural expansion for food production, and inadequate forest management (Dhital, 2009).

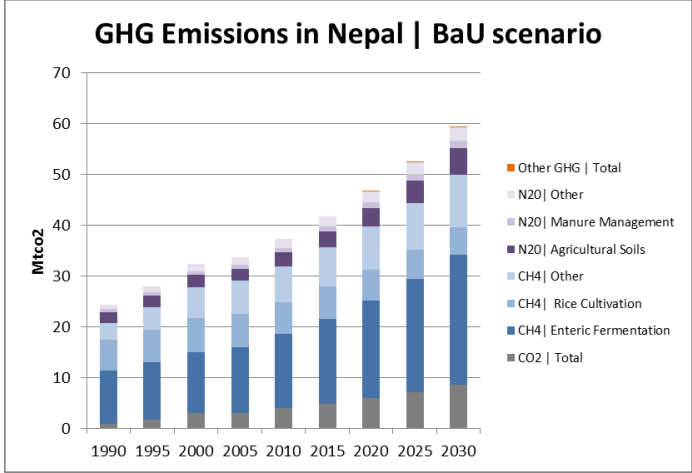
As deforestation can also be triggered by other sectors - in particular agriculture, infrastructure and energy sectors - REDD+ programmes can help to reduce deforestation, forest degradation and GHG emissions. The Gwalinidaha Community Forestry of Nepal has a particularly vast potential for carbon storage amounting to 166.68 tons/ha (Aryal et al. 2013). The carbon stock is higher in pine-dominated forests than in mixed forests. However, some authors found that REDD+ projects are not an attractive market-based option for Nepalese community forests and associated user groups, as this implies significant participation costs for stakeholders and a reduction in the extraction of forest products and grazing in the forests (Maraseni et al. 2014). Therefore, the implementation of non-market-based bilateral or multilateral approaches is thought to be more feasible.

4.3. Policy options to determine Nepal’s contributions

We noted above that abatement actions in Nepal are mainly dependent on financial support. Therefore, a cost evaluation of Nepal’s mitigation action is vital to ensure a transition toward a low-carbon pathway. A quantification of both financial transfers and costs is still missing in the literature.

A first step toward quantifying Nepal’s mitigation cost would be the evaluation of a business-as-usual (BaU) scenario. The BaU scenario serves as a benchmark for GHG emissions, as it operates from the assumption that new mitigation policies are absent. This paper provides a BaU scenario based on historical trends for CO2 emissions and EPA projections for other gases (Figure 3). Figure 3 shows both historical and projected GHG emissions up to 2030. The BaU scenario predicts an increase in GHG emissions, both for CO2 and other gases.

Figure 3: BaU Scenario

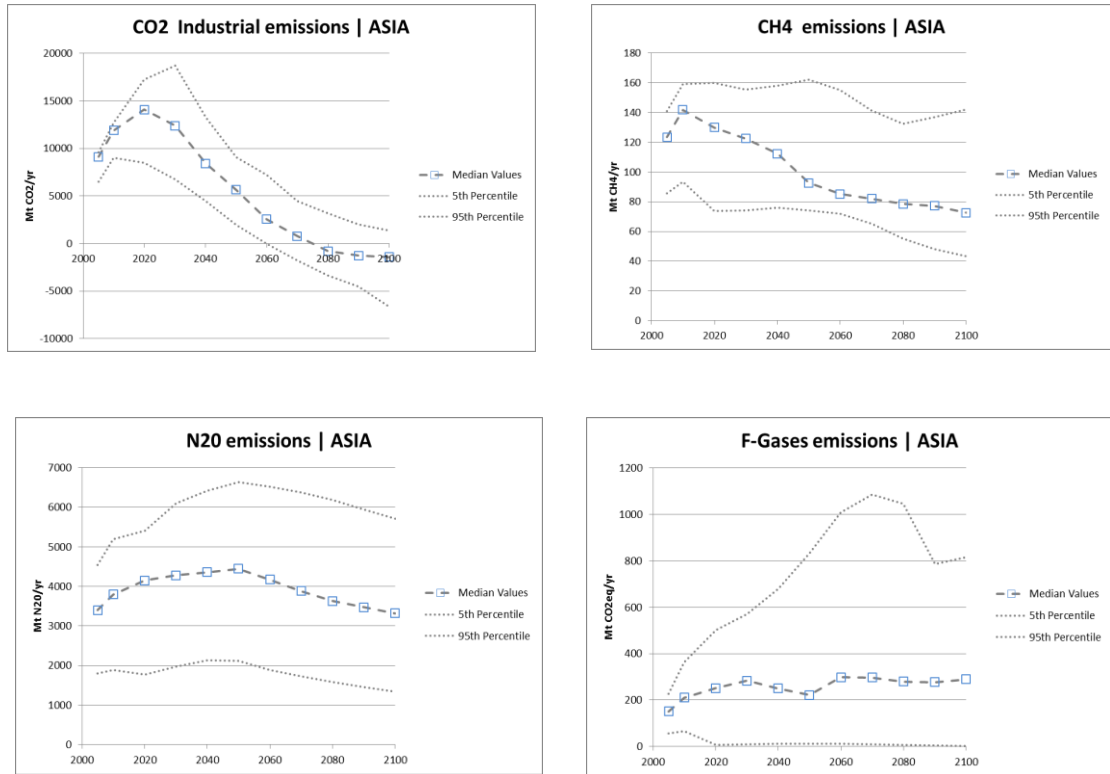


Source: Own calculations based on EPA projections and historical trends. Include historical emissions for all gases (MtCO2-equiv.) and BAU projections (2015-2030)

As for non-CO2 emissions, this paper employs projections provided by EPA (2012). But we also discern the contribution of GDP growth, population, energy intensity and carbon intensity to CO2 emissions growth by using a Kaya decomposition technique. The BaU scenario assumes a GDP growth of 3.8% per year (IMF, 2012). Regarding population, we employ UN projections (2012). And regarding both carbon intensity and energy intensity indicators, we assume a continuation of historical trends. As a result, CO2 emissions are predicted to increase over time, even though their contribution to total GHG emissions will remain small (figure 3).

Conversely, a policy scenario assumes a cap on GHG emissions. Hence, quantitative models can help policymakers to identify key technologies compatible with the 2°C target and associated with this the lowest possible cost. To this end, the IPCC AR5 database collects data from different models, consistent with the 2°C target. Data are available for different macro-regions. The low-carbon pathway envisioned for Asian countries, i.e. the most relevant for Nepal, is portrayed in figure 4.

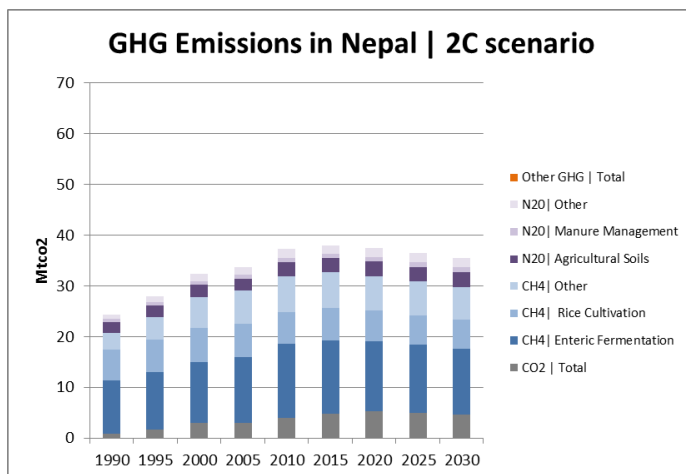
Figure 4: 2°C scenario: GHG emissions in Asia.



Source: Own calculations based on IPCC AR5 database

Unfortunately the IPCC AR5 dataset does not contain detailed country-level information. To get a first-order approximation nevertheless, we applied the emissions change rate for Asian countries to Nepal, for each type of gas (CO₂, CH₄, N₂O, and other gases), as shown in figure 5.

Figure 5 – 2C scenario: GHG emissions in Nepal.



Source: Own calculations based on AR5 IPCC database and EPA data

This methodology guarantees that the associated GHG emissions path in Nepal is consistent with the median emission trajectory envisioned by the IPCC for Asia under a 2°C target.

The IPCC's Fifth Assessment Report suggests that a global carbon price is a necessary condition to achieve the low-carbon scenarios. A carbon price can be introduced by means of a carbon tax, or an emission trading scheme. In Nepal a carbon tax compatible with a 450 ppm target would reduce cumulative GHG emissions from the energy sector by 12% over the period 2005-2050

(Shakya et al., 2012). The associated discounted GDP losses amount to US\$65 billion (at 2005 prices), using a 10% real discount rate. Although a low-carbon policy is costly, it would entail important co-benefits such as additional employment in the country and a reduction in local pollutant emissions, along with a lower dependency on energy imports (Shakya et al., 2012; Shrestha and Shakya, 2012).

Still, Nepal's energy sector only accounts for a fraction of future GHG emissions. As noted earlier, Nepal's agricultural sector has the biggest mitigation potential. Hence, Yan et al. (2009) have identified the mitigation potential of CH₄ emissions from rice cultivation in Nepal, which amount to 32.6% of emissions. This can be met by applying both rice straw off season (where possible) and draining all continuously flooded rice fields. Regarding enteric digestion in ruminant livestock, enhancing feeding practices can reduce CH₄ emissions. Another possibility is to use dietary additives including hexose partitioning, acetogens or methane oxidisers etc.

The overall mitigation cost refers to the GDP losses between the BaU and the low-carbon scenario, considering all GHG emissions. As no thorough evaluation of Nepal's mitigation costs has been conducted, so far, Nepal's INDC report should go in the direction of filling this gap. Models can identify an optimal portfolio of technologies for each sector and the associated costs. Since Nepal is a least developed country, abatement actions should be supported by international finance. Then, an assessment of the financial transfer required to stay on track with a low-carbon pathway can assist the country during the negotiation process.

5. Considerations for Nepal

A workshop on domestic preparations for the INDCs, organised by UNFCCC and partners in 2014, revealed that many Parties from both developed and developing countries are engaged in the process of formulating their INDCs. In general, developing countries also reflect on the difficulties and barriers underpinning this process as well as on their needs for support in order to be able to present their contributions on time for the new agreement.

Whether the Government of Nepal will decide to submit their country's INDCs well in advance of December 2015 is exclusively their prerogative. However, a decision to do so would be of high political significance as the country is currently holding the Chairmanship of the LDC Group, who, together with the Small Island Developing States (SIDS), is calling for a strong legally-binding global climate agreement foreseeing dedicated international adaptation support for the most vulnerable countries.

Considering Nepal's low emissions level and its low capacity to adapt and mitigate, the country's government could consider including in their INDCs potential options that ensure continuous improvement of the regulatory framework currently implemented to support climate action after 2020. These options would include a continuous improvement of the strategies, policies and programmes in sectors relevant for Nepal's GHG emissions development. Based on the sectorial analysis above, more ambitious contributions could be envisaged with further international support.

Other LDCs, including The Gambia and the Republic of Mali, are currently kicking off their INDC processes. Also various partners, including the Global Environment Facility (GEF), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the World Resource Institute (WRI), are conducting several support programmes. The governments of the United Kingdom, Germany, the United States, France and Sweden have all indicated that they consider supporting countries in preparing their INDCs.

On average an amount equivalent to US\$ 100 000 is being made available in most cases, which could be slightly reduced or increased based on the countries' needs. The supported activities range from the in-depth analysis of high mitigation options with a view to assess the mitigation potential in key sectors, as well as the costs and possible implications associated to their

implementation, over stakeholders' consultations to activities to mobilise a political endorsement of INDCs.

To ensure the success of these projects, it is important to ensure political buy-in from the beginning of the process. Possible considerations could include:

- A rapid identification of the sources of funding and the securing of the financial resources required to implement the project;
- An implementation of the analytical and consultational stages by March/ April 2015;
- The development of an INDC document for national validation, political endorsement and submission to UNFCCC between March and June 2015.

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