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Climate policies in China and India:

planning, implementation and linkages with international negotiations

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FROM DEVELOPMENT PRIORITIES...

China and India face very different challenges for the years to come, mainly because they are at very different levels of economic development. However, they both have to tackle the challenges of energy security and social development, which translate nationally into the concepts of the "harmonious society" in China and "inclusive growth" in India. And they both face huge challenges related to the development of infrastructure (transport and housing), laying the foundations for a low-carbon economy in the longer term.

... TO LOW-CARBON STRATEGIES IN CHINA AND INDIA

Low-carbon development strategies will differ from country to country, depending on the national contexts and priorities. China recently made important resolutions in the framework of its 12th Five-Year Plan, aimed at decoupling economic growth from greenhouse gas emissions. India has been developing "National Missions" on climate change, and recently set up an expert group to study "low-carbon strategies for inclusive growth".

FROM THE UNDERSTANDING OF POLICY INSTRUMENTS...

China and India have already implemented several energy and climate policies and plan to develop them further, including *via* innovative policy institutions and instruments. Thereby, they should account for huge uncertainties in future economic development, a defining parameter of China's particular national circumstances. Regarding the instruments themselves, market-based mechanisms are increasingly used in both countries, with the progressive implementation of Emission Trading Systems in China and the Perform, Achieve and Trade scheme in India.

... TO RESTORED TRUST WITHIN THE INTERNATIONAL NEGOTIATIONS

Internationally, major economies have pledged significant actions under the Cancun Agreements. However, recorded country pledges are very difficult to compare in the abstract. Therefore, it is important to look at the domestic action of countries, at the basic level of policies and measures, as the basis to restore mutual understanding at the international level. Indeed, mistrust between countries and sometimes the lack of credibility on the international scene for some of them, are clearly sources of tensions in international climate negotiations.

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1. FROM INTERNATIONAL PLEDGES TO NATIONAL POLICIES

International climate negotiations provide a forum for discussions between countries to agree on greenhouse gas (GHG) emissions reduction targets, with the aim of getting closer to the levels advocated by climate scientists. More specifically, the goal is to come to an agreement on effort sharing between countries and major regions.

In the lead-up to the Durban climate conference (December 2011), it is clear that the United Nations process is slowing down, with the difficulty of reaching an agreement on the issue of a legally binding framework to succeed or replace the Kyoto Protocol; the principle of common but differentiated responsibility is the stumbling block between developed and developing countries. Furthermore, discussions focus on pledges, in other words commitments expressed as a unique indicator of the evolution of national GHG emissions.

1.1. Pledges that are difficult to decipher

Although 41 developing countries have taken mitigation actions, only 16 have translated these into quantitative emissions reduction terms. Moreover, the very expression of pledges (in absolute terms, in carbon intensity or in relation to business as usual, BAU) differs considerably from one country to another, as shown in Table 1, especially between Annex 1 and non-Annex 1 countries.

Furthermore, the levels of commitment recorded in the Cancun agreement (December 2010) are difficult to decipher. The metrics chosen, the inclusion or exclusion of emissions from land use, land-use change and forestry (LULUCF), and the possible inclusion of flexibility mechanisms are just some of the obstacles to assessing the level of rigour for pledges made. This has consequences in terms of credibility, not only at the level of the international community (mutual understanding between countries), but also for the countries themselves, which must develop their own conviction that ambitious targets are achievable (a matter of self confidence).

The heterogeneous breakdown of pledges and the lack of information in some cases (for example concerning the references for calculating business as usual, or BAU), also make it difficult to compare and aggregate GHG reductions pledges at the international level. Most analyses show, however, that according to the most optimistic hypotheses, the sum of pledges made by countries will not be enough to meet the long-term target of limiting global warming to +2 °C relative to pre-industrial times (UNEP, 2010).

Not only do the pledges give no specific definition of the effort to which they are supposed to correspond, but they also fail to account for their translation into policies and measures at the national level. This hampers effective cooperation between countries, especially concerning the implementation of coherent public policy instruments for energy and climate; cooperation that is vital to meeting ambitious targets at the global level.

1.2. The need to analyse national climate policies

All of these difficulties thus argue for an in-depth study of the policies and measures already implemented or simply planned by the countries, beyond the pledges made at the international level. This approach supports the objective of the Learning Platform, which was set up in 2011 between Europe and emerging countries to provide a veritable discussion forum for decision-makers, researchers and experts in energy-climate public policy, and is aimed at ensuring a better mutual understanding of domestic debates. This project must facilitate international cooperation in order to overcome tension felt in negotiations.

The policies and measures implemented or discussed in the different countries may prove to be insufficient to meet international pledges or, on

Country	Type of emissions reduction targets	Quantitative targets for 2020	Reference year/Nature of target	Share of global emissions in 2005		
Annex 1 countries						
United States	In absolute terms	- 17 %	2005	14.3 %		
EU27	In absolute terms	- 20 % to - 30 %	1990	10.6 %		
Japan	In absolute terms	- 25 %	1990	2.8 %		
Russia	In absolute terms	- 15 % to - 25 %	1990	4.2 %		
Canada	In absolute terms	-17 %	2005	1.7 %		
Australia	In absolute terms	- 5 % to - 25 %	2000	1.2 %		
Non-Annex 1 countries						
China	In intensity	- 40 % to - 45 %	2005-2020 variation	15.1 %		
India	In intensity	-20 % to - 25 %	2005-2020 variation	3.9 %		
Indonesia	In relation to BAU	- 26 %	BAU in 2020	4.3 %		
Brazil	In relation to BAU	- 36 % to - 39 %	BAU in 2020	6.0 %		
Mexico	In relation to BAU	- 30 %	BAU in 2020	1.4 %		
South Korea	In relation to BAU	- 30 %	BAU in 2020	1.2 %		
South Africa	In relation to BAU	- 34 %	BAU in 2020	0.9 %		

 Table 1. A selection of pledges recorded in the Cancun agreement (Source: UNFCCC)

Note : BAU: Business as usual scenario

the contrary, appear more ambitious than these pledges.

The first case concerns countries that are behind schedule in terms of developing a genuine lowcarbon development strategy, or which use international negotiations to drive national debates or for strategic purposes.

In the second case, uncertainty concerning longterm pathways is of course one explanatory factor, but a country may also be tempted to set a target it knows it can easily meet in order to minimise risks taken on the international scene. Furthermore, the developing countries readily hide behind the principle of common but differentiated responsibility in negotiations, even though they are making some real efforts at the national level.

1.3. The case of the major emerging Asian economies

In this article we detail the state of policies and debates in two emerging countries associated with the Learning Platform – China and India –, which are among the top GHG emitters. According to the Current Policies Scenario of the latest International Energy Agency World Energy Outlook (IEA, 2011), CO₂-energy emissions in China account for almost 29.5% of the global total in 2030 (compared to 23.8% in 2009), and those in India account for 8.8% of global emissions in 2030 (compared to 5.4% in 2009).

The pledges made by these countries at the international level are expressed in carbon intensity. This is explained by the considerable uncertainty about future growth and the determination to avoid jeopardising this growth, which guarantees social peace. For these high economic growth countries, the spotlight is therefore on the decoupling of GHG emissions from economic growth, and more specifically on the energy efficiency of factors of production, which implies the structural transformation of economies. In the medium to long term, it will clearly be preferable to have emissions reductions pledges in absolute terms for these countries.

What, therefore, are the specific policies and measures discussed, already adopted and/or implemented by China and India hiding behind the pledges they made at the international level?

2. CHINA'S CLIMATE POLICY

In China, the main institution responsible for energy and climate policy-making is the National Development and Reform Commission (NDRC). It acts as a super-ministry in charge of drawing up medium- and long-term economic and social development plans, under the supervision of the State Council. In particular, the institution formulates and coordinates energy and climate policies, especially through the National Energy

Figure 1. Energy intensity in China – comparison with European and world averages

Source: Enerdata, 2011

Administration (NEA) and its Department of Climate Change.

Chinese policy goals are usually defined by the central government and assigned to the provinces, which are then responsible for implementing and monitoring policies across the whole country. Economic and social development objectives are set out in five-year plans, which lay the foundations for new economic development strategies and launch reforms that follow centralised government planning.

2.1. The 11th five-year plan

Under the 11th five-year plan, the main objective of energy policy was a 20% reduction in energy intensity over the 2006-2010 period, which also applied to the provincial level. This objective was a real trend reversal after energy intensity rose over the previous period (an average yearly increase of 3.8% between 2002 and 2005). This upward trend broke with more than 20 years of almost continuous reduction, illustrating the growing difficulty of improving energy efficiency in a heavily industrialised economy.

The first *ex-post* assessments of the evolution of energy intensity over the 2006-2010 period showed that the target had been met, or nearly met, with an improvement of more than 19.1% in energy intensity according to the authorities. In reality, the objectives of the 11th five-year plan ought to have been easier to meet as they should have been accompanied by the progressive growth of the tertiary sector. Against all expectations, the opposite occurred, with the continued industrialisation of the country despite contrary political will.

Most of the policies and measures implemented during the IIth five-year plan were top-down in nature and therefore had limited efficiency, implying high administrative and financial costs. In addition, the social costs of command and control





measures proved very high (such as the measure to close small, inefficient plants).

China implemented several policies during the 11th five-year plan, including the Renewable Energy Law in 2006 and the Energy Conservation Law in 2007 (CPI Beijing, 2011). In addition, the central government encouraged capacity building at provincial level and provided assistance to Energy Service Companies (ESCOs). This plan involved considerable central government investment in the form of financial transfers, subsidies, different incentives, preferential interest rates and loans, etc. A wide array of accompanying policies was implemented, ranging from regulated market access for energy-intensive industries to incentive policies such as tax reductions or financial support, as well as a number of other economic instruments such as preferential rates in the electricity sector.

The main measures concern the largest sources of emissions, especially the I ooo largest energyconsuming enterprises through the Top-Iooo Programme, as well as small sources of industrial emissions with the planned closure programme known as "structural optimisation" (Price et al., 2011). On the other hand, the Chinese authorities experienced difficulty regulating medium-sized sources of emissions with command and control instruments.

The 11th plan also provided for the installation of more than 200 GW of renewable energy capacities, including 190 GW of hydropower, 5.5 GW of biomass, 10 GW of wind power and 300 MW of photovoltaic power. The targets were met in 2009 and were therefore largely exceeded over the period of the 11th plan.

In addition to the provincial programmes, the total emissions reductions from these measures were to represent almost 4.3 Gt of CO_2 according to the II^{th} plan, equivalent to one year of European Union emissions. Initial studies show that most of these projects made the expected savings, and

Source: Enerdata, 2011

sometimes even exceeded them, with the exception of the programme for the renovation of existing buildings and the targets for the expansion of the tertiary sector.

Analysis of policy efficiency remains a complex task due to a level of public information that is still low and to a lack of robust data. The Chinese administration is nevertheless attempting to remedy these problems by setting up more efficient monitoring, reporting and verification (MRV) systems.

2.2. The objectives of the 12th five-year plan

The 12th and latest plan to date covers the 2011-2015 period. It was adopted by the 11th National People's Congress in March 2011. The objectives of the 12th plan have been considerably revised downwards in order to take into account the fact that the least costly emissions reductions have already been made. For example, the potential for closing small power plants is now lower: only 20 to 30 GW of power capacities remain to be closed in the short term, consistent with standard efficiency criteria (according to the Energy Research Institute).

The five-year energy intensity reduction target is now only 16% by 2015, but for the first time it is accompanied by a carbon intensity reduction target of 17%, which also applies to the provinces but is differentiated across them. This reflects the determination to progressively move towards a lowercarbon economy, even though future growth must continue to rely essentially on coal, the only fuel that is sufficiently low-cost and abundant to meet the enormous demands of the Chinese economy. Despite being revised downwards, the outlook for economic growth is still very high (7% on average by 2015). In particular, the challenges linked to urbanisation have become a key issue, with one billion people living in cities and the prospect of having 221 cities with more than one million inhabitants by 2025.

According to the Chinese Academy of Sciences, 33.3% of the objectives of the 12th five-year plan are aimed at a better use of natural resources or environmental protection, compared to 27.2% in the 11th plan (Fulton, 2011). The 12th plan provides for higher energy efficiency targets for buildings (especially commercial ones), electricity generation using renewable energy, an increase in forest cover (of 12.5 million hectares), the continued development of high-speed railway lines (an additional 4 700 km by 2015) and the deployment of electric vehicles (500 000 vehicles by 2015).

The share of coal in electricity generation should fall from 72% to 63% by 2015, substituted by renewables. The share of non-fossil fuels should increase from 9.6% of supply at the end of the 11th plan to 11.4% of primary energy by 2015. Very ambitious targets for the installation of new renewable energy capacities concern hydropower (90 GW), wind power (40 GW) and solar power (4 GW). Furthermore, the grid will be developed to cope with problems of connecting the new capacities and thereby ensure a better integration of renewables into the energy system. By 2020, the share of renewables in total consumption in China could reach 20%.

The moratorium imposed on the construction of new nuclear power plants should imply a delay in the Chinese nuclear programme (more than 30 GW of additional capacities in the 12th plan), while the authorities find safer solutions and reassure the public. In the short term, this should mean more opportunities for renewables and natural gas in electricity generation. Nevertheless, it is unlikely that the development of this low-emitting energy will truly be called into question.

The massive use of command and control public policy instruments revealed its limitations in the 11th plan, and the 12th plan therefore aims to increase the use of market instruments. These must have a direct impact on energy consumption levels and on GHG emissions via the price effect, especially by triggering energy efficiency actions among end consumers. The instruments envisaged mainly consist in environmental taxes, including the carbon tax, but also and above all in emissions trading systems (ETS). The government has announced the creation of pilot carbon markets in seven provinces and cities around the country by 2013, and appears to be seriously considering the implementation of a national ETS by 2015. According to a recent NDRC proposal, electricity prices could become progressive, according to user consumption levels, if not completely deregulated in the short term.

Beyond a simple list of environmental targets, the 12th plan particularly focuses on the development of promising strategic industries, including clean vehicles, energy management and environmental protection, new energies, new materials and new generation information technologies. To achieve this, research and development investment should progress further to reach 2.2 to 2.5% of GDP by 2015, compared to 1.7% today (Climate Group, 2011).

2.3. Necessary economic changes

Among the global leaders in energy and climate policy, China is unquestionably one of the most advanced developing countries in terms of the sophistication of the instruments developed. China learns quickly, especially from the experience of the developed countries, and from Europe in particular. But further progress is needed regarding the transparency and quality of data. The main reason for this enthusiasm is that its tremendous economic development must not be challenged by energy supply problems and environmental constraints. Conversely, the environment and the quality of life of the population must no longer be compromised by economic growth at any cost. In this respect, Chinese policy for 2020 can be compared to the European Commission's Resource-Efficient Europe initiative.

In addition, a new law on climate change is planned in two or three years' time. It could lay the legal groundwork for the future institutions responsible for energy and climate policy and better regulate the role of existing institutions.

In the longer term, China will need to undertake a dramatic transformation of its economy, beginning with massive deindustrialisation along with the considerable expansion of the tertiary sector. For several years, China has been very dynamic and shown considerable capacity in terms of infrastructure development, largely supported by public investment. This capacity must be progressively put towards the transition to a low-carbon economy. Despite the considerable problems of security and of transparency from the authorities, in just a few years, China has for example developed the most extensive high-speed rail network in the world (more than 8 000 km in 2010). Even if this country has not yet set itself long-term objectives (for 2050), there is no doubt that it will be among the first powers to put in place specific strategies for an ambitious and pragmatic energy transition. China fully intends to seize the opportunity to become the indisputable leader in the next industrial revolution, which will undoubtedly be linked to the green economy.

3. INDIA'S CLIMATE POLICY

The general guidelines for Indian policy are set out by the Planning Commission in five-year plans. Initially a highly centralised planning body, this commission now delivers strategic visions of longterm development and decides on national priorities, according to an integrated approach. It is made up of sectoral divisions, such as the Power and Energy Division and the Environment and Forests Division, which also includes a climate change cell.

Energy policy is defined and implemented by different ministries, including the Ministry of Power, the Ministry of Environment and Forests (in charge of climate issues) and the Ministry of New and Renewable Energy. The Bureau of Energy Efficiency (BEE), under the Ministry of Power, conducts energy efficiency programmes. This body was created in 2001 after the Energy Conservation Act was voted by the Indian Parliament.

3.1. Priority to development

Indian priorities are clearly geared towards economic development and poverty reduction (see the Millennium Development Goals). The pace of economic growth nevertheless generates increasing energy requirements, and environmental issues are now a priority. Thus, Indian policy particularly focuses on targets for energy security, economic competitiveness, the reduction of local pollution and land management and control.

Electrification is constantly expanding (almost 84% in 2009 according to the Ministry of Power, this number being subject to controversy), but remains far behind the levels reached by the developed countries. India contrasts sharply with China on this point (a country that has already achieved almost 100% rural electrification). The priorities for these two countries therefore differ and the eradication of energy poverty is a priority for the Indian State. GHG emissions per capita are still very low (less than 2 tCO₂eq/person) and could double by 2030, without exceeding the global average. The Indian Prime Minister's announcement in Heiligendamm in 2007 that per capita emissions should never exceed average developed country levels (currently almost 14 tCO2e/person) thus seems lacking in ambition given that India is behind schedule.

Tackling climate change is also a key issue, since it is closely linked to the vulnerability of many regions to natural disasters, especially to extreme weather events. Over three quarters of India's coastal areas are likely to be hit by cyclones and 68% of the country is subject to drought. In the short term, India would therefore benefit greatly from adopting proactive climate change policies from the viewpoint of adaptation.

The availability of land resources is also a crucial issue in view of the demographic changes taking place. This is probably one of the greatest obstacles to the social acceptability of new industrial projects (including nuclear ones). New development strategies and future energy and climate policies will clearly have to take into account these resource constraints.

3.2. Existing energy and climate policies

As in China, Indian policy is largely set out in five-year plans. The 11th plan covers the 2007-2012 period and focuses particularly on pursuing

the liberalisation and openness to foreign investment policies initiated in 1991. It also aims to limit dependence on oil product imports through energy demand management and the development of domestic production capacities.

The power capacity scheduled in the 11th Indian plan is 79 GW. It provides for the installation of 60 GW of new power capacities, half of which is to be coal-fired, followed by hydropower (16 GW) and nuclear (3 GW). However, the targets set out in Indian plans are often far from being met and installed capacity by the end of the IIth plan is expected to be 20% below the capacity initially planned (at 63 GW). The numerous delays are due in particular to energy supply problems or to the time needed to obtain environmental permits. For the 12th plan, which will cover the 2012-2017 period, the target is of the same order of magnitude, with 65 GW of new capacities to be installed. India is aiming to install 49 GW of renewable capacities between 2013 and 2022 (the period covering the 12th and 13th five-year plans), including more than 22 GW of wind power, more than 4 GW of biomass, more than 3 GW of small hydropower and 19 GW of solar power (The Climate Group, 2011).

India's energy and climate policy has been largely drawn up via two reference texts:

- The Integrated Energy Policy, published in 2006, which makes recommendations concerning the organisation of energy markets and the future development of the sector;
- The National Action Plan on Climate Change, released in 2008, which identifies eight "National Missions" for a strategy for 2017, addressing both climate adaptation and mitigation issues.

The National Mission on Enhanced Energy Efficiency anticipates a 20 GW saving in electricity demand relative to BAU by 2020, which is double the target set in the IIth plan. The emissions reduction target is almost 100 MtCO₂ per year by 2015 and the energy saving target is 23 Mtep per year. This mission, supervised by the BEE, clearly consolidates the previous programmes, especially the one concerning the creation of energy labels (2006), which was aimed at inefficient equipment in the residential and tertiary sectors. In particular, it provides for four different yet complementary mechanisms, implying the progressive application of economic instruments in order to maximise cost-effective energy saving potential; packages of measures aimed at speeding up the replacement of inefficient equipment in certain sectors and making this equipment more affordable for consumers; programmes to finance energy efficiency; and new fiscal instruments, etc.

India has high hopes for solar power through its National Solar Mission, with an ambitious target of

20 GW of solar power in 2022, especially for water treatment. Emphasis is placed on research efforts, which have been constant since the 1990s. Clean energy development targets, which are part of the national energy plan, are generally met or even exceeded. However, the problem of subsidies for energy consumption persists and goes against energy efficiency targets, cancelling out the expected benefits of energy conservation policies.

Forests also play a crucial role in India. They cover a third of the country and secure the livelihoods of almost 300 million people. This is why the National Mission for a Green India has invested 10 billion dollars over 10 years to improve 10 million hectares of forest and to plant 5 million hectares of new forest. These results are important, especially to foster the emergence of new natural products and for the development of ecotourism.

3.3. The low-carbon development strategy

An expert group was recently set up by the Planning Commission in order to translate the carbon intensity target announced into a long-term lowcarbon development strategy (Planning Commission of India, 2011). In reality, the expert group goes beyond the Indian pledge as recorded in international negotiations and is studying two scenarios.

- A first scenario, known as "determined efforts", leading to a 23 to 25% reduction in emissions intensity by 2020 relative to 2005 levels, or a level of ambition similar to the Indian pledge in Copenhagen, then in Cancun. According to the report, this corresponds to the vigorous pursuit of existing policies and measures.
- A second scenario, known as "aggressive efforts", leading to a 33 to 35% reduction in emissions intensity by 2020 relative to 2005 levels, or a level of ambition 10 percentage points above the pledge recorded in international agreements. According to the report's expert authors, this is the upper limit of what can be achieved.

To do so, several assumptions regarding economic growth and energy demand (especially for electricity) were studied by the experts, but all of them place the scenarios in a context of sustained economic growth: from 8 to 9% on average per year by 2020. There has been a certain amount of criticism about the quality of the study (methodology adopted, data used, analyses, etc.), and especially about the level of ambition reflected by the scenarios. Indeed, in certain sectors, the level of ambition appears to be as high, or lower, than those taken into account in current legislation



Figure 3. Energy intensity in India – comparison with European and world averages

Source: Enerdata, 2011

and the programmes already implemented by the government. For example, targets for the development of renewables are lower than those proposed by the National Action Plan on Climate Change in 2008, even in the "aggressive efforts" scenario (CSE, 2011).

The formulation of a low-carbon development strategy remains a long-term process, and Indian experts should take on board criticism already made in the production of future reports. The exercise must be credible, especially to the international community, if it is not to prove counterproductive. It must eventually propose specific avenues for meeting the targets announced by India, or even exceeding them. This, in any case, is the goal of the expert group.

3.4. Some major uncertainties still exist

The Indian position evolved considerably between the Rio and Cancun summits, with the country working towards the acceptance of binding commitments "in an appropriate legal form", as well as international procedures to verify effective GHG emissions reductions. However, domestic policy, especially the cabinet reshuffle in summer 2011, seems to have "refocused" India's official position at the international level, with a return to a more rigid stance in the lead-up to the Durban conference.

Nonetheless, there is no doubt that India is taking action at the domestic level and is determined to limit the environmental impact of its development. But given that it is lagging behind economically, the country is calling for international financial and technical support.

Analysis of Indian policies and measures on energy and climate issues reveals an imbalance between the different sectors of the economy, with



Figure 4. CO₂ emissions (combustion) per capita in India – comparison with European and world averages

Source: Enerdata, 2011

over half of these policies and measures concerning the power system and almost none for other sectors (rail transport, for example). Moreover, long-term scenarios remain relatively fragile and open to criticism regarding their assumptions (economic growth, energy demand analysis, etc.), with consequences in terms of the credibility of BAU projections and therefore of the assessment of energy intensity and emissions reduction potential. Future studies by the expert group in charge of studying long-term low-carbon development strategies should be the opportunity to remedy some of the current shortcomings.

4. CONCLUSIONS

Most predictive global modelling exercises and so-called "450 ppm" scenarios such as the European Roadmap 2050 (EC, 2011) suggest that developing countries should bring their GHG emissions in line with their 1990 levels by 2050. At present, it is uncertain whether China and India will be capable of this and whether the proactive approach launched by these countries will be enough.

China and India nevertheless have ambitious environmental objectives and are gradually adopting the means to meet these. Their development strategies have a number of similarities, especially regarding local pollution, which is a pressing issue in the short term. These countries must tackle the challenges of energy security and social development, even if they are starting from very different levels. This translates into the concepts of the "harmonious society" in China and "inclusive growth" in India. Furthermore, both countries are facing the same huge challenges regarding the development of infrastructure (transport and housing) that will lay the foundations for a low-carbon economy in the longer term.

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	Europe	China	India				
CONTEXT							
Institutions/governance	Liberalisation (=> planning ?)	Centralised planning => liberalisation	Planning => liberalisation				
Political decision-making	EU + Member States Complex coordination	Central power + provinces Hierarchical	Federal level + States Complex and fragmented				
Economic context	Stable – crisis management	High growth secondary priority	High growth top priority				
Social context	Stable – crisis management	Growth top priority	High growth absolute priority				
VISION							
Energy/climate strategy (role international scene)	Remain among world leaders	Become world leader	Become an established force - independence				
Energy/climate strategy (national priorities)	Follow the planned pathway	Become world leader (innovation, technologies, etc.)	Find the best possible pathway				
Energy prospects	Renewables + nuclear are sufficient	High growth coal essential	High growth Coal essential				
GHG prospects	Reduction Achieve the transition	High growth Prepare the transition	High growth Prepare the transition				
Uncertainties (level and content of growth)	Low	Very high	Very high				
Timescales	Policy for 2020 Target coherence by 2050	5-year plans, 2020 targets, 2050 approach	5-year plans, 2020 targets				
TERMS							
Efficiency	Becoming a priority again (final consumption)	Absolute priority (use of fossil fuels)	Absolute priority (use of fossil fuels)				
Infrastructure	High inertias – not organised	On schedule – organised and proactive	Behind schedule – catch up objective				
Adaptation vs. mitigation	Mitigation	Both	Adaptation > mitigation in short term				
Finance	Contributor	Short-term beneficiary (future contributor?)	Beneficiary				

Table 2. Relative contexts in Europe, China and India with a view to the transition to low-carbon societies

However, the challenges to be met remain fundamentally different, especially because these countries are objectively at incomparable levels of economic development (4 400 US\$/person in China compared to I 500 US\$/person in India in 2010, according to the World Bank). The same climate targets would imply very different pathways for these countries in terms of public policy implementation:

- China must undertake a dramatic structural transformation of its economy, especially by fostering the expansion of its tertiary sector and reducing the share of heavy industry in its national production. The same applies to the reduction of the share of investment in favour of consumption in the country's growth;
- India must first develop its economy, eradicate poverty and meets its growing energy requirements at least environmental cost. The structure of the Indian economy is not problematic in the short term, even if the agricultural sector requires significant reorganisation.

By way of conclusion, Table 2 above shows the fundamental differences in positioning, environment (economic and social), capacities and governance between these major emerging countries and Europe. The priorities for these regions are different as they are linked to sets of constraints that are themselves diverse, and largely dependent on the pathway chosen, whether political, social or technological. Ambitions in terms of the transition to low-carbon economies are significant in all of these regions, even if visibility for the pathway to adopt is not the same. This is particularly linked to the very high uncertainty, in both China and India, about the level of future economic growth and its content.

Whereas the European Union has set itself the objective of achieving the transition to a 75% emissions reduction or more by 2050, China and India must first guarantee economic and social development in the medium term (by 2020) and invent new models for low-carbon economic growth in the longer term, with no certainty at present about the emissions levels achievable by 2050. This is the concept of the green economy advocated by economists the world over.

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