United Nations Industrial Development Organization

Distr.: General
28 October 2009

Original: English

General Conference
Thirteenth session
Vienna, 7-11 December 2009
Item 9 of the provisional agenda
Forum on industrial development issues

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Issues paper by the Secretariat

Part I: Global economic slowdown – the impact on manufacturing

I. Introduction

1. The current economic crisis, referred to as "the great recession of 2008", is the most serious since the great crash of 1929, despite emerging evidence of a global manufacturing rebound gathering pace and raising hopes of a sustainable recovery within a year. The recent signs of bottoming out and uneven optimism in equity markets should not mask serious remaining challenges to global prospects and industrial development. The impact of the mistakes of imaginary wealth creation on the real economy is severe, affecting adversely production systems, global value and supply chains, trade networks and the global integration of factor markets.

2. Three high-level meetings (Washington, November 2008; London, April 2009; New York, June 2009) have been dedicated to finding solutions. The G-20 Summit in September 2009 at Pittsburgh was intended to assess progress since the Washington and London summits with respect to sustainable recovery from the global financial and economic crisis. The G-20 called for a more substantial regulatory framework to address critical issues.

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II. Broad themes

3. Eight overarching themes concerning industrial development prospects arise from the great recession of 2008:

(1) In the wake of manifest failures leading to the causes of the crisis, ***what should be the governing economic philosophy for socio-economic development?***

(2) As all countries scramble to save their industries—and prevent social collapse through unacceptably high unemployment levels—***what should be the economic role of the state and government in socio-economic development in the context of jobless recovery?***

(3) As the role of the state is revisited, to what extent should it be "interventionist-developmental" or "deregulatory-regulatory" for fostering sustainable industrial development? In other words, ***what is the role of industrial policy?***

(4) The key contention of economic governance that has to be resolved is whether ***markets do not work because of state intervention*** or whether ***markets only work because of state regulatory powers?***

(5) Bailouts and stimulus packages are tantamount to socialization of losses. ***What limits should be placed on those measures and what should be the follow-up after withdrawing fiscal stimuli?***

(6) Deep concerns are expressed on achieving the Millennium Development Goals (MDGs). ***To what extent should stimuli be diverted towards the achievement of the MDGs without sacrificing the factors strengthening the road to recovery?***

(7) Green industry is emerging from the crisis. ***Will greening industry based on technological progress further exacerbate the issue of jobless recovery?***

(8) Protectionism protects nobody. ***Are burgeoning protectionist pressures demonstrating the urgency of strengthening trade rules?***

III. Key issues

4. A selection of important issues and questions arising from the financial crisis are presented in the following pages.

Issue 1: The origin of the crisis

5. The origin of the current crisis arguably lies in the policy dynamics of financial regulation: liberalization and deregulation of the Atlantic economies and financial governance failing to keep pace with so-called innovations in financial markets. On the back of massive global current account imbalances, this generated an accelerated expansion of credit as well as a general rise in asset prices to unsustainable levels—especially in housing markets fuelled by leverage and debt.

6. The nature of the crisis, evolving from increasing risk in credit markets to widespread credit unavailability first to households and then to the corporate sector, has lead to a precipitous fall in consumer demand, with a consequent impact on

trade. From 2008 to 2009, world trade fell between 9 and 13 per cent and merchandise export value fell 45 per cent.

7. In the OECD countries, which represent about 70 per cent of global GDP, output is forecast to contract by 4 to 5 per cent in 2009.

Question arising

8. ***In an increasingly interconnected world, given the pervasiveness of financial crises, how can developing countries—already struggling to achieve the MDG targets—prepare themselves to withstand external shocks in the global economy?***

Issue 2: Transmission channels and dynamics of the crisis

9. In the globalized production systems of today, the transmission channels of the downturn are the internationally integrated networks of transnational corporations (TNCs). Around 65 to 75 per cent of world trade is accounted for by TNCs, with the bulk flowing to developed countries (68 per cent for developed economies, 27 per cent for developing countries and 5 per cent for transition economies). The "global factory" is characterized by the interdependence of its constituent parts.

10. Thus, given the collapse in demand, as the corporate sectors in developed countries adjust their cost structures downwards and reconfigure their networks to minimize costs, manufacturing is set to decline. Examples abound, for instance as measured in 2009 compared to the previous year: manufacturing decreased in Europe by 12 per cent, in Brazil by 15 per cent, and in Taiwan Province of China by 43 per cent. Industrial production in the United States of America shrank by about 14 per cent.

11. Because in the networked economy every manufacturer is also a consumer of intermediate goods, links in global, national and subnational value and supply chains are breaking on the back of an 11 per cent decline in total OECD investment. These dynamics are resulting in annual falls in global manufacturing production of some 20 to 25 per cent (20 per cent for emerging markets and about 25 per cent for emerging Asia).

Question arising

12. ***Given the spatially distributed and integrated system of manufacturing and production, how can developing countries increase their industrial resilience to micro-economic adjustments by international firms and TNCs, and increase South-South global value- and supply-chain linkages?***

Issue 3: The MDGs and the role of manufacturing

13. To what extent will the impact of the global economic downturn affect developing countries' endeavours to achieve the MDGs through industrial development? While trillions of dollars are pumped into rescue schemes in the form of bailouts and stimulus packages, it is important not to forget the poor and their potential. Unless determined efforts are initiated many countries are unlikely to meet the MDG targets. Until recently, robust income growth stemming from productive sector response to macroeconomic stability in many countries helped accelerate progress towards reducing income poverty. In contrast, the recent

commodity boom-led growth pushed many more into the poverty trap. The impact of the financial crisis is more on employment than on output.

14. Based on a new study by the United Nations Department of Economic and Social Affairs, using a comprehensive modelling framework for six Latin American countries, a projected recession in 2009 and 2010 followed by a slow and gradual recovery towards pre-crisis growth levels by 2015 would put some of the region's low income countries (Bolivia, Honduras and Nicaragua) substantially further off track towards achieving the MDGs. Even countries such as Brazil, Chile and Costa Rica, which were well on track, are projected to fall short of several of the MDG targets because of the global financial crisis

Question arising

15. ***Can manufacturing serve as a dynamic driving force on the road to recovery in enabling developing countries to achieve the MDGs?***

Issue 4: Responses to the economic slowdown

16. The responses of various developed country Governments to the economic slowdown have followed a broadly similar pattern: the provision of stimulus packages. In contrast, developing countries are looking for country-specific policies to address their problems.

17. During the 1930s, interventions to get the world out of the Great Depression were generally focused on a traditional Keynesian pump-priming approach: by stimulating consumption and investment through temporary increases in government spending and/or tax cuts. These were largely short-term measures to get the economy moving. In the current recession countries are looking specifically for the right stimulus packages and the right transformative growth path. Stimulating innovation is emerging as a key part of the transformative process.

18. There is a saying: "Never let a crisis go to waste". From the UNIDO perspective what we are seeing now is a convergence of interests that is emerging in industrial policymaking and the climate change agenda. The current crisis is increasingly viewed as an opportunity to encourage real "green shoots". Focused funding for research, education, new cleaner technologies and energy, green-tech investments and other forms of innovation constitute a major part of this new green growth agenda.

19. In the OECD countries strategic financial relief measures and stimulus packages moderated by economic nationalism cover variously: deposit insurance; bank debt guarantees; capital injections; nationalization; ring-fencing and purchasing of toxic assets; funding of commercial paper and asset-backed securities; restrictions of short-selling; and a combination of conventional as well as non-conventional measures.

20. In contrast, developing countries in general and least developed countries in particular find themselves vulnerable and face a combination of after-shocks (trade reduction; oil and food price volatilities; remittances, FDI and ODA reductions), and are having to rely on the international community including the IMF, the World Bank and United Nations specialized agencies to address their vulnerabilities.

21. Each of the fiscal and monetary aspects of the responses has broader implications. These include the privatization of gains and the socialization of costs and risks on the one hand, and the creation of inflationary pressures and regulatory regimes that constrict innovation on the other. For developing countries, limiting the number of people pushed back into poverty is of foremost concern.

22. A disturbing factor in the response to the economic slowdown is increasing protectionism. Perhaps it is high time for countries to strengthen trade rules to control protectionist tendencies. The challenge is to get the world out of the financial doldrums by any means but protectionism.

Questions arising

23. ***Given the vast differences in policy "degrees of freedom" and "fiscal space" and the asymmetries in policy responses across crisis-hit economies, how do developing countries maintain, generate and leverage resources to address various impacts of the crisis and make R and D and innovation part of the shift from quantitative increases to qualitative improvements? Is trade protectionism the way to tackle the current economic crisis? Is resisting protectionist measures economically and socially acceptable?***

Issue 5: Prospects for recovery

24. Reversing the fall in demand, a collapse in output and manufacturing, a decline in global trade, averting rising unemployment and the possibility of a double-dip recession remain the top priorities of central bankers and industrial policymakers in developed and developing countries. The main policy challenge is the avoidance of a jobless recovery. Given the excess manufacturing capacity and enhanced technical progress, output can be increased without re-employing labour. This is indeed a real cause for concern.

25. Over-reliance on market forces is fading, and market-based public activism, with policy nuances, is emerging as an alternative.

26. The fallout and requirements in money terms—implying the extent of the impact on economic and industrial activity—is staggering: financial sector write-downs to date of about $4 trillion; stimulus of about $9 trillion by Governments in financing for banks; an IMF estimate of the refinancing gap rollover of some $25.6 trillion in 2011; equity to reduce leverage to 17 to 1 is at approximately $500 billion for the United States, $725 billion for the euro zone and $250 billion for the United Kingdom. The report of the Secretary-General of the United Nations "The world financial and economic crisis and its impact on development" (A/CONF.214/4, 22 June 2009) estimated that the massive liquidity injections into the global financial system, since 1 September 2008, amounts to $18 trillion or approximately 30 per cent of gross world product. In the light of the worldwide synchronized recession in output and the further need for emerging markets (mostly in Central and Eastern Europe) to re-finance approximately $1.8 trillion worth of debt, there is a risk that less priority will be given to technical assistance to developing countries in general and least developed countries in particular.

Question arising

27. ***Given the scale of the global economic slowdown, its attendant manufacturing difficulties and the ensuing job crisis which could result in the loss of 51 million jobs worldwide, what should developing countries do to survive the damage, navigate the crisis and emerge stronger in the aftermath?***

Part II: Global economic recovery – seizing opportunities for greening industries

I. Introduction

28. "Green" industry is emerging as a long-term development imperative amidst signs of global economic recovery. Billions of dollars of national stimulus packages are aimed at supporting a transformative shift from increases in resource utilization to improvements in global industrial efficiency. Green shoots of recovery are visible, and there is a widespread United Nations-led call for a green new deal for a green global economy. Directing investments towards a resource efficient and cleaner industry, sustainable energy security, low-carbon industrial infrastructure and environmental protection is pivotal to a green recovery. The global market for environmental technology and low-carbon industries is currently estimated at approximately $1,000 billion and is expected to grow to about $3,000 billion by 2020.

29. A fully green global economy is possible and profitable, and it is needed to prevent the worst effects of overusing natural resources, depleting of ecosystems and climate change. Numerous opportunities exist across industrial sectors which, given an operable global legislative framework, could help reduce greenhouse gas emissions by 50 per cent by 2050 provided the necessary technology options, political will and financial resources are available. The current economic crisis provides the opportunity to position economies on more sustainable pathways to recovery and growth through green public investments and implementing public policies that encourage greener private investments. Many countries have dedicated considerable proportions of their stimulus packages, from 6 per cent in Spain to 81 per cent in the Republic of Korea, to this end.

30. In response to such developments, the UNIDO Green Industries Initiative entails the creation of awareness, knowledge and capacities in institutions responsible for sustainable industrial development. It calls for assistance to enterprises in the greening of industry. This includes, inter alia, low-carbon paths to industrial development, increasing the efficient use of raw materials, increased use of recycled by-products, adoption of international commitments and higher-resolution environmental standards, and acceptance of environmental management systems as a requirement to participate in global value chains. It also addresses the creation and start-up of new companies working in green activities, such as recycling, waste treatment and consulting in material and energy efficiency. The intelligent use of standards and labelling schemes can provide market-based incentives to promote green industry and trade when coupled with effective regulations. The use of standards and labelling schemes for public procurement decisions to promote sustainable products, equipment and services can also play a

crucial role. Governments, the private sector and NGOs are elaborating a variety of standards, labels and certification programmes that look at the entire life cycle and sustainability of production.

31. The potential for entry by developing countries into resource-efficient and low-carbon industries and related services is immense. Sustainability considerations by consumers and government environmental policies are driving rapid growth in these industries in developed countries, and some developing countries, particularly the emerging market economies, have demonstrated success at establishing internationally competitive firms in low-carbon industries. In situations where populations are without access to electricity in developing countries, renewable energy for the rural poor would have not only a positive impact on moderating climate change, but also could provide a major stimulus for generating environmentally sustainable industrial activity and entrepreneurship.

II. Broad themes

32. Amidst signs of recovery and opportunities from greening industries, nine broad themes arise from the anticipated green recovery in the years ahead:

(1) Given the imperatives of climate change, are stakeholders rushing into greening industries because of billions of dollars available in stimulus packages, grants and incentives or because of the long-term sustainability of commercial returns?

(2) Can developing countries afford greening their industries?

(3) As realizing opportunities for greening industries depends on knowledge dissemination, technology transfer, and capacity-building, to what extent are developing countries capable of complying with the requirements of cleaner production, and can developing countries start low-carbon industrialization without delaying economic growth?

(4) With a focus on making R and D and innovation part of the recovery and transformative process towards low-carbon production, what are the conditions for an enabling policy and institutional environment to foster higher rates of green? How to create an enabling policy and institutional environment to accelerate green innovation in countries that are latecomers in industrialization?

(5) As changing the pattern of energy and material use for greening industries rests on reducing distances to technological frontiers, and as developing countries tend to lack authentic, valid and reliable data to assess their distances to technological frontiers, what support is available to enable product-specific best practice in greening the production process?

(6) In the wake of the anticipated jobs recovery, do developing countries enjoy comparative advantages in promoting green industries?

(7) Are the objectives of the MDGs, poverty reduction and a low-carbon economy compatible?

(8) Considering the potential opportunities arising from greening industries, are national plans allocating sufficient resources to the green stimulus and, if so,

what are the dangers of "green camouflage" (subsidies in the absence of legislative and international pressures for a real transition to low-carbon production)?

(9) Given the international climate change negotiations, how are industrial enterprises to be engaged convincingly through regulation?

III. Key issues

33. A selection of important issues and questions related to the greening of industry in the context of the anticipated global economic recovery are presented in the following pages.

Issue 1: Global recovery—from the "brown" to "green" economy

34. While the potential market value in establishing new green industries can be very large, the environmental and economic potential of greening existing industry may be even more significant. It is estimated that improvements in the efficiency of industrial production processes, including carbon capture and storage, could reduce CO2 emissions by about 37 per cent by 2050. Replacing "brown" production processes by increasingly cleaner, more energy-efficient and material-saving technologies and re-organizing production will contribute to the overall efficiency and competitiveness of an industry and therefore also of the efficiency of the capital stock. Additionally, this will reduce exposure to energy price and raw material price volatility.

Question arising

35. ***Can the greening of industry become the sustainable "driver" of the world economy and will it build the base for jobs within high growth green industries?***

Issue 2: Effective technology transfer for greening industry

36. The COP 14 decision leading to the GEF Poznan Strategic Programme on Technology Transfer draws attention to the need for effective transfer of technology from North to South and South to South, accompanied by the knowledge and information flows that can play a significant role in accelerating green industrial growth. Technology-exporting countries can benefit from the business opportunities that emerge from a growing demand for a wide range of energy and material saving and low-carbon technologies. Indeed, the latecomers to industrialization can adapt to the demands of greening industry by using sustainable manufacturing technologies and environmental knowledge services — provided there is increased willingness regarding funding mechanisms to support technology transfer. A key dimension in this is new market-based policy and economic instruments, which take into account not only the private returns of firms but also the social returns of new environmental friendly low-carbon technologies.

37. Relatively advanced technologies will be crucial to industrial development in lower-income countries. However, developing countries tend to be passive recipients of innovative products and production technologies. Investments in clean energy and low-carbon technologies, according to UNEP, could lead to some 20 million jobs in low-carbon industries by 2030. Yet, even such auspicious

employment-creating prospects may be insufficient to address the employment challenges in the developing world.

38. Resource availability in developing countries often demands choices of technique that optimize the use of labour, and the profile of the new low-carbon technologies tends to be capital intensive. Paradoxically, adoption of very advanced low-carbon technologies, particularly by SMEs, could result in lower rather than higher employment levels. This, however, should be seen as an opportunity for technological adaptation to local circumstances by developing countries and a way of supporting national science and technological capabilities in a manner consistent with their factor endowments.

Question arising

39. ***Given the innovative characteristics of resource efficient and low-carbon technologies, how can international trade be employed in ways to generate green research and, simultaneously, enable the transfer of such research from developed to developing nations?***

Issue 3: The role of R and D and innovation

40. To emerge from the current global economic crisis and to mitigate the worst effects of climate change, a green industrial revolution is needed to increasingly decouple growth from increasing consumption of natural resources and the growth of carbon emissions. R and D and innovation, supported in part by climate finance, constitute the key to such a green industrial revolution. Stimulating innovation should be a foundational aspect of the transformative process of cultivating new business frameworks that rebalance global choices regarding resource utilization.

41. The recovery packages announced in 2008 have varying support for innovation and green investments. These range from 1 per cent of the package (Italy) to 69 per cent (Republic of Korea) according to research by HSBC. The most audacious approach, of the Republic of Korea, goes as far as spending $87 billion by 2015 on "green growth", understood to include not only new green products, processes and industries but also environmentally sustainable socio-economic arrangements and eco-friendly standards.

42. However, despite the G-20 announcement of a $200 billion innovation stimulus, there is a need to put in place the right framework conditions for knowledge-based growth and recovery. The current crisis is increasingly viewed as an opportunity to encourage green growth, nevertheless given the financial deficiencies of the developing countries, funding and technical assistance should constitute a major part of the new green growth agenda.

Question arising

43. ***In shifting our focus to economies of scope in green entrepreneurship, what is the potential for competitiveness in developing countries?***

Issue 4: Capacity-building for seizing the opportunities

44. For developing countries to attain the same production standards as in industrialized countries, well-configured strategies, adequate technologies and

support in the form of capacity-building as well as policy incentives are needed. This enables and provides incentives for manufacturers to re-engineer their production processes not only to minimize material and energy per unit of production but also to maximize recyclables.

45. The investment to fund capacity-building in the transition to a resource efficient and low-carbon economy is large, but dwarfed by the required capital investments required. It will be critical to attract private sector capital, leveraged by well-focused public policy and robust regulation.

Question arising

46. ***In an increasingly interdependent global recovery, is capacity-building for greening industry a global public good and, if so, what are the minimum pre-conditions for efficient capacity-building?***

Issue 5: The role of the state

47. Seizing opportunities for greening industry in the global economic recovery calls for the state to emerge as an entrepreneur not in terms of owning industrial assets but in terms of framing and incentivizing dynamic sources of green growth. Lessons from the financial and economic crisis have forced Governments into a more active policy and regulatory role in industrial development. It has been recognized that unregulated markets do not necessarily deliver socially superior outcomes in the environmental domain and there continues to be debate about the role of Governments in industry and markets. However, had it not been for the recent massive government interventionism and support, several globally integrated industries would have collapsed with attendant high social cost. The relative success of such government intervention not only provides legitimacy for government action for industrial restructuring and development, but also opens opportunities for novel forms of involvement by Governments in greening industry.

48. Industrial policy is generally understood as government inspired and incentivized intervention aimed at modifying the structure of industrial production towards more advanced, higher productivity and value-added activities that bring, ultimately, an increased return to welfare choices. At the strategic level a sustainable industrial policy ensures that progression towards more advanced industries eliminates poverty and establishes more resource efficient and low-carbon industries. Opportunities are not guarantees, and policy responses by the State are necessary. During the global economic downturn and emerging recovery, the important role of the state has been rediscovered.

Question arising

49. ***Given that the industrialized countries' general government outlays on average amount to 45 per cent of GDP, what should be the role for Governments in assisting green industry to perform its dynamic role and what limits should be placed on the remit of the state?***

List of abbreviations

CO_2	carbon dioxide
COP 14	14th Conference of the Parties to the United Nations Framework Convention on Climate Change (Poznan, Poland, 2008)
FDI	foreign direct investment
G-20	Group of Twenty Finance Ministers and Central Bank Governors
GDP	gross domestic product
IMF	International Monetary Fund
MDG	Millennium Development Goal
NGO	non-governmental organization
OECD	Organisation for Economic Co-operation and Development
R and D	research and development
TNC	transnational corporation
UNEP	United Nations Environment Programme