UNIDO RESEARCH PROGRAMME

COMBATING MARGINALIZATION AND POVERTY THROUGH INDUSTRIAL DEVELOPMENT ‹COMPID›

Supporting industrial development: overcoming market failures and providing public goods

Summary

UNITED NATIONS
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COMPID

Combating Marginalization and Poverty
through Industrial Development

Supporting industrial development: overcoming market failures and providing public goods

Summary

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Contents

Preface

The report, *Supporting Industrial Development: overcoming Market Failures and Providing Public Goods,* is part of a broader research programme of the United Nations Industrial Development Organization (UNIDO), called Combating Marginalization and Poverty through Industrial Development (COMPID).[1] The principal aims of the report are to identify market failures in industrial development and to clarify the role of UNIDO in supporting the provision of public goods to overcome those market failures.

[1]COMPID includes the following five projects: *(a)* Supporting industrial development: overcoming market failures and providing public goods; *(b)* Technological development in low-income countries: policy options for sustainable growth; *(c)* Optimizing the impact of industrial development on poverty alleviation; *(d)* Productivity enhancement and equitable development: challenges for small- and medium-sized enterprises development; and *(e)* Social capital for industrial development: operationalizing the concept.

I. New conditions for industrialization in a globalizing world

The nature of industry is changing rapidly under the forces of globalization. Those changes manifest themselves in increasing specialization within manufacturing, thus creating implications for industrial development policy. As a result, there is an urgent need to define a role for public support in the context of the new industrial realities. Many questions arising from that need are yet to be answered. For instance, what is the need for, and nature of, public goods in industrial development? In what ways can the provision of public goods help to overcome market failures and promote industrial development? An analysis of the nature of market failures and public goods amid the new industrial realities could help national and international organizations, such as UNIDO, in their efforts to support the industrialization process.

Chapter I of the report shows how globalization affects industry in developing countries, in particular in marginalized, low-income countries, both in theory and using country case studies. Chapter II describes the nature of market failures and the provision of public goods. Chapter III discusses public support for industrial development and proposes guidelines for fair competition between international organizations, such as UNIDO, and the private sector.

A. Fragmentation of production and global value chains

Globalization, or internationalization, of production is influenced by a number of factors, namely, liberalization of economic policies, especially trade and investment; technical change, in particular in information and communication technologies; declining transport costs; and economies of scale in growing markets. Globalization of production and increased trade in intermediate products manifest themselves in two ways, through fragmentation of production and through global value chains, which may be described as follows: *(a) Fragmentation of production through foreign direct investment*. A significant part of the recent increase in trade is due to the process of "vertical specialization" in the fragmentation of production processes. The search for cheaper production costs continues to force global firms to relocate parts of the production process. In so doing, firms are able to maintain design, research and development or marketing functions in the headquarters in developed countries, and can decide to relocate labour and less skill-intensive production processes, such as assembly, to developing countries where labour costs are lower. Globalization of production therefore occurs through the fragmentation of production processes and often manifests itself in foreign direct investment through efficiency-seeking and vertically integrated transnational corporations; *(b) Global value chains through networks of firms across borders (without involving ownership)*. Another form of globalization of production is through global value chains. A value chain, by definition, includes the entire range of activities that are required to lead a product or service from conception, through each of the intermediate phases of production (transformation and producer services inputs), to delivery to final consumers, and its ultimate disposal after use. A value chain can

be termed global only when it involves different firms at different stages in different countries. A chain consists of a number of different enterprises. While each enterprise specializes in different functions, they are linked to each other through means of cooperation in a network. One example is the textile-clothing value chain, starting from the use of raw materials to produce fibre, extending to textile and clothing production, and finally to retail and other end uses. In the buyer-driven textile-clothing chain, large retailers and branded marketers and manufacturers play an important role in coordinating such production networks, typically involving specific firms in developing countries that are contracted to supply goods according to specification.

Fragmentation of production offers developing countries a wide range of possibilities for industrial development, if the performance of firms is sufficiently efficient in, for example, assembly operations with low labour costs but high productivity. On the other hand, globalization of production, as part of the value chain, is based not only on the efficiency of individual firms, but also on the importance of the *systemic* efficiency of the entire value chain. It is therefore necessary fully to understand the importance of both the systemic efficiency of the entire chain and the efficiency of *individual* parts (assembly of those products that meet certain consumer requirements). While the process of fragmentation encourages firms to specialize and compete on the basis of efficiency of individual production processes, value chains encourage firms to specialize in stages of production that fit within the entire value chain. That is defined as *appropriate* production. However, specific knowledge and capabilities are required to participate in a value chain. Thus, if a firm is not willing to participate, or to learn to participate, in a function that is needed to maximize the *systemic* efficiency of the entire chain, it can be sidelined, irrespective of how efficient the individual firm is. In essence, the conclusion is that both efficient *and* appropriate production are important.

B. Public-private interactions

The process of globalization forces countries to rethink how the private sector operates vis-à-vis the public sector. Since integration into global production networks requires firms to operate under market conditions, questions arise as to how the public sector can support private-sector-led development in general. In that context, there is also a renewed emphasis on how public-private interactions affect industry. Over the past decades, the role of the State in providing industrial goods has diminished, whereas the role of the private sector in providing services has increased. While globalization forces countries to rely increasingly on private sector development, the private sector, for its part, relies on market transactions.

Market-led industrial development is possible only if countries establish the right governance structures and create an environment conducive to the promotion of the private sector and industrial development. An even more blurred distinction is thus created between public production (and what it provides), on the one hand, and private production (and what it provides), on the other. The literature distinguishes between various public-private interactions, as follows:

- *Public-private partnerships.* Public-private partnerships include different forms of public-private interaction, where both the public and the private sector assume joint ownership and responsibility as opposed to setting up fully public or fully private organizations. Such partnerships are specifically established and negotiated to cover, in detail, mutual responsibilities and obligations of public and private partners, in order to provide agreed inputs and outputs under enforceable contracts;

- *Public-private consultation mechanisms.* Public-private consultation mechanisms involve formal consultations between both sectors on policy issues, with final decisions taken by the public sector;

- *Joint public-private activities.* Other forms of public-private interaction could be termed as joint public-private activities. Such activities can include the provision of subsidies for training and technology centres. Joint ventures between foreign and State-owned enterprises can also fall under that category.

Public-private partnerships occur mainly in the service sector, for example, in physical infrastructure (roads, ports and airports), telecommunications infrastructure, energy services (electricity generation and distribution), water supply and waste treatment. They therefore affect industry indirectly. While the general aim of public-private consultation mechanisms is to increase the relevance of public policies that support private sector development, some appear to focus on the industrial sector, while others are more macroeconomic in design. Joint public-private activities seem to be the main avenue through which public-private interactions affect industry directly. Examples include the Penang Skills Development Centre in Malaysia, which is sometimes considered best practice for providing appropriate training, or the case of Intel investment in Costa Rica, which helps to coordinate demands of industrial firms and the supply of relevant capabilities.

C. The changing conditions of industry

The changing conditions described above, in particular the increased emphasis on specialization in the manufacturing production process, have implications for industry and industrial support. The traditional view of industry was that of firms producing final goods, and support was focused on the economic efficiency of individual firms. However, changing conditions demand the consideration of new issues in industry. In particular, it is important that individual establishments be seen as playing a part, albeit small, in a long supply chain or value chain. Industry can be better described as consisting of a range of industrial activities, some of which provide inputs into others, and some of which produce final goods. A vibrant and productive industry depends not only on the efficiency of individual production processes, but also on the appropriateness of each individual production process in value and supply chains. One stage of the production process is more likely to fit in with the next if it complies with national standards, or with international standards if the next stage is in another country. Moreover, the different activities, such as design, production, marketing and research and development, are becoming increasingly interlinked.

Organizations supporting industrial development must keep in mind the changing conditions of industry when providing technical assistance, in particular in relation to knowledge generation, including global forum activities. Technical assistance in the area of industrial development should support efficient and appropriate industrial production, thereby enhancing the efficiency of those stages of the production process that supply inputs to the next stage. On the other hand, global forum activities related to industrial development should extend beyond discussions on how best to support efficient industrial production. Specifically, global forum activities should examine how national and international conditions and activities outside industry affect industrial development. Such knowledge could help to assess the appropriateness of technical assistance for promoting

efficiency in certain stages of production. Global forum activities should also monitor issues relating to market access, such as the emergence of trade preferences, and the findings should be translated into appropriate technical assistance. For example, in relation to the African Growth and Opportunity Act, preferential access to the garments market of the United States of America could enhance industrial development in the affected countries by evoking an appropriate supply response.

D. Implications for industry in low-income countries

A desk study of three low-income countries—Bolivia, the United Republic of Tanzania and Viet Nam—shows how globalization has affected industry. The process of globalization, as described earlier, may have tended to focus more on middle-income countries, but has bypassed industry in many low-income countries. Although many low-income countries are not yet ready to participate fully in global value chains, in the case of Viet Nam, foreign firms are beginning to have a high impact on industry.

The following are some of the implications of globalization of production that were observed in the countries concerned:

- Globalization affects industry in low-income countries in varying degrees, through import competition, through specialization in manufacturing arising from the emergence of cross-border production networks and global value chains, and through the emergence of other export opportunities. While some industries are unable to withstand the forces of import competition, foreign direct investment and cross-border production networks support the growth of others. There was evidence that firms in the three countries produce for global value chains, but the importance of such production was often limited at the national level. Hence, a drive towards enhanced competitiveness is necessary to achieve greater participation in the processes of globalization, focusing on *efficient* production, but increasingly also on *appropriate* production;

- A significant proportion of firms in low-income countries are concerned about competition with other local firms in the local market. Moreover, only a small number of firms export manufactures, and exports rarely account for a large share of production. Thus, industrial development policies must consider the needs of local firms in the local market and define steps needed for their entry into global value chains;

- The process of globalization, as mentioned earlier, forces countries to *rethink how the private sector operates vis-à-vis the public sector*. Public support for industrial development in the sample countries has often been inappropriate, partly because the support was not relevant to the needs of the private sector. In fact, mistrust between the public and private sectors in all three countries is evident.

Therefore, attempts to intensify public-private dialogue could be an important step towards enhancing industrial development. Improved dialogue would also allow a better understanding of what the private sector regards as appropriate industrial support and an enabling regulatory framework governing industrial production.

In sum, as a result of globalization of production, the *efficiency* of individual firms is important, but not sufficient to survive in global value chains. Firms need to specialize in those stages of production that fit within the entire value chain, which is defined as *appropriate* production. While it would be relevant for technical assistance in industrial development to focus on creating *efficient* and *appropriate* production, knowledge generation facilitating the provision of assistance should be broader. What needs to be examined is how national and international conditions and activities outside industry affect industrial development. Such knowledge would help better to assess at which stages of production support is necessary to create both efficient and appropriate production. While it is important to respond to the forces of globalization, it must be recognized that support for domestic production for the local market is equally, if not more, important in low-income countries. In considering the above-mentioned needs, due attention must be paid to the role of industrial policy during the entire globalization process, ensuring a steady and effective public-private dialogue to design appropriate, market-based industrial policies.

II. Market failures in industrial development and the provision of public goods

The second major issue dealt with in the report is the relationships between market failures, public goods and industrial policy in developing countries. Industrial policy is broadly interpreted as devising and implementing a strategy for industrial development, including activities that provide certain public goods. Chapter II of the report discusses the causes and various types of market failure in industrial development. It relates the concept of public goods to market failures, and considers how the provision of particular public goods can contribute to industrial policy. A specific concern is how UNIDO can assist developing countries in addressing market failures and providing public goods related to industrial development.

The report identifies the following five broad activities where the provision of public goods can contribute to industrial development: policy research and transfer; collection and dissemination of information; provision of skills and training; development and adaptation of technologies; and support to regulatory and coordinating agencies. A coherent industrial policy, or industrial development strategy, requires coherent and coordinated activities in all those areas. Given the magnitude of the issues to be covered, it is not surprising that so many poor countries lack the capacity to design and implement effective industrial policies.

The activities of UNIDO are considered under the above-mentioned five categories. The principal role for UNIDO, as an international coordinating agency, would be to develop and transfer industrial policy knowledge to developing countries. To play that role, UNIDO must have the capacity to conduct industrial research and policy analysis, as well as to collect and disseminate statistics and information. Such capacities should also include the transfer of industrial policy knowledge, such as advice on skills and training policy, and cover regulatory needs for an effective industrial policy.

A. Market failures in industrial development

Industrial development strategy is, in itself, beset by many instances of market failures. At the economy level, national policy must be able to facilitate the linkages and complementarities in investment and production activities, which private agents fail to recognize. At the firm level, market failures relate to access to credit, appropriate technology and skilled labour, for example. Furthermore, as the activities of agents and firms generate positive and negative externalities, public interventions are necessary to ensure that the best outcome for society is achieved.

A large number of market failures in industrial development arise because of the existence of externalities. Externalities can be positive (external “goods” such as education) or negative (external “bads” such as pollution). As private providers fail to take externalities into account, external

bads end up being overprovided and external goods underprovided, giving rise in both cases to market failures.

Table 1 provides a summary list of relevant market failures. It also relates a number of market failures to industrial development interventions. The most extensive market failures, in terms of how they combine to undermine industrial development, relate to coordination. An industrial policy is needed to identify and support the creation of linkages. Intervention is also necessary to ensure that externalities (positive and negative) are properly addressed. Some of the market failures are very specific and demand concrete responses, while others require broader responses.

TABLE 1. INDUSTRIAL DEVELOPMENT, MARKET FAILURES AND RESPONSES

Type (sources of failure)	Examples of market failures	Responses: policies and activities
Coordination		
	Externalities ignored Linkages not exploited No policy coherence Complementarities	Capacity building for industrial policy to identify linkages and externalities National strategy (industrial policy)
Technology		
Developing, adapting and adopting	Incomplete and imperfect information Network externalities	Promoting technology transfer and adoption Support for standardization and quality control
Skills formation		
	Externalities (in training workers) Imperfect information	Coordinate and/or subsidies for training
Capital markets		
Access to finance	Rationing and/or high interest rates	Micro-credit schemes or formal sector subsidy
Environment		
Protection, conservation, cleaner technologies	Negative externalities not accounted for	Product and process standards and regulations

Source: COMPID Research Programme.

B. Public goods and market failures

For a good to be termed a public good, it must exhibit two characteristics. First, the good must be non-excludable: once it has been provided, nobody can be excluded from enjoying its benefits. If it is difficult or costly to supply on a non-excludable basis, private providers will lack the incentive to ensure its provision. Secondly, the good must be non-rival in consumption: one person can benefit from the public good without reducing the amount available to others. Even if charging for the benefit (that is, exclusion) is possible, it may not be desirable from the point of view of society, if the social benefit exceeds the private. The fundamental point about public goods is that they will be undersupplied if their provision is left to the market. Public agents therefore have a significant role in ensuring the provision of public goods.

Public goods are directly related to market failure. Non-excludability implies that private firms will fail to provide the public goods because they are not confident that consumers will pay for the benefits. Non-rivalry, on the other hand, implies that firms will fail to supply enough of the public goods because they undervalue the social benefit. In effect, the positive externality is not fully taken into account by the private sector. Here again, public intervention can increase their provision. Although addressing market failures and providing public goods are related in terms of how they

can support industrial development, there is no direct relationship between specific market failures and specific public goods. There is no doubt a wide range of public goods that must be provided purely because they are public goods. Similarly, there is a wide range of market failures that must be addressed because they constrain industrial development. It is, however, important to note that providing public goods is only one way of addressing market failures.

C. Public goods and industrial policy

Industrial policy, interpreted as devising and implementing a strategy for industrial development, must include the provision of certain public goods. The presence of a coherent policy confers widespread benefits to all. At a more concrete level, industrial policy can be designed to include elements to overcome market failures. Providing support to industry by adopting new and locally appropriate technology or standards is an example; industrial policy provides the coordinating role that markets fail to ensure. In most aspects of industrial policy, it is the *non-rival nature of benefits*, rather than non-excludability, that is the relevant public goods feature. As such, by including the provision of public goods in industrial policy, externalities and market failures will be addressed.

Table 2 provides a classification of public goods in industrial policy. Such information could be useful for designing industrial policies and identifying the roles and responsibilities of organizations. It distinguishes between core and complementary activities. Core activities are those that are

Table 2. Providing public goods as part of industrial policy—by activity

	Core activity	Complementary activity	
Public goods sector and spatial range	**Provision of public goods**	**Production of public goods**	**Consumption and utilization of public goods**
KNOWLEDGE *Research, transfer, dissemination, skills*	*Policy research*	*Research and transfer; training*	*Facilitating and disseminating; skills*
International	Industrial policy research	Policy development Statistics, evidence Training provision	Transfer, advice and experience Skills acquisition
National	Industrial policy research (local)	Policy development National statistics Training	Disseminating local advice and providing support Education; skills
QUALITY OF ENVIRONMENT *Developing and applying technologies*	*Research on cleaner technology*	*Developing cleaner technology*	*Facilitate use of cleaner technology*
International	Cleaner technology	Developing cleaner technologies	Promoting the use of cleaner technologies
National	Appropriate (local) technology	Research, adapting technologies to local conditions	Adopting appropriate technologies
GOVERNANCE *Regulation and coordination*	*Policy coherence (good governance)*	*Institutions*	*Implementation*
International	Coordinating research and policy	Research and policy networks	Support for adapting and adopting research and policy
National	Adapting and coordinating policy and research	Policy and research agencies, services Regulatory agencies	Support for adapting and adopting research and policy

Source: COMPID Research Programme.

directly required to provide the public good, whereas complementary activities are those that contribute to the production and facilitate the consumption of the public good. The activities are also classified according to public goods sector, namely, knowledge, environment or governance, and spatial range, national or international. The core activity could be considered the aim of policy, or the objective to which an organization contributes. In general, the core is knowledge on industrial policy. Specifically, under knowledge, the core activity is represented by policy research; under quality of environment, it is represented by cleaner technology; and, under governance, it is represented by coordination. Table 2 is intended to illustrate the range of activities involved in providing public goods as part of industrial policy. It is not intended to be comprehensive, nor is it intended to cover specific project activities.

On the basis of table 2, five broad industrial policy activities that include or relate to the provision of public goods, and that would help to overcome market failures, are as follows:

- *Policy research and transfer.* Individual agents, such as firms, cannot be expected to be aware of all the effects of their behaviour on others, nor of the cumulative effects of the actions of many agents. While assessing those effects is a role for governments, it extends beyond accounting for externalities and market failures to having an overall strategy. Industrial policy must therefore be designed to include conducting research and collating the results thereof, which in turn can facilitate the process of policy transfer;

- *Collection and dissemination of information.* The most common source of market failures arises from imperfect information, either because useful information is not available, or because not all potential beneficiaries have access to the information. In terms of industrial policy, an important function is to provide information to firms on, for example, available technologies, market opportunities and product standards;

- *Provision of skills and training.* General education contributes to increasing the knowledge capacity of a country. As there will be cases where the public sector is best placed to identify the types of general skills and training required, those requirements should be properly addressed in the industrial strategy;

- *Development and adaptation of technologies.* Since research knowledge is a public good, the public sector can play a constructive role in promoting new technology, in general, and cleaner technologies, in particular. National research capacity is most beneficial for adapting available technologies to local requirements and for promoting research on issues of specific interest to the country;

- *Support to regulatory and coordinating agencies.* Regulatory agencies are required both to monitor anti-competitive activities (restrictive business practices) by firms, and to ensure that externalities are taken into account. The former task involves anti-trust bodies and regulation of monopolies and utilities. The latter is of greater significance in the context of environmental regulation, but also with regard to compliance with product standards and health and safety regulations. Accordingly, the activities of various agencies should be coordinated as part of an industrial policy.

D. Role for UNIDO in providing public goods

UNIDO can address market failures and make a direct contribution to the provision of global public goods by diffusing industrial policy knowledge and collecting and analysing industrial data. UNIDO can also support the development of institutions and industrial capabilities required, if the private sector is to respond by adopting new technologies and availing itself of market opportunities. To that end, UNIDO could play an important role in each of the five categories identified as follows:

- *Policy research and transfer.* Good policy-making entails the ability to learn from the experiences of others, and to tailor the lessons learned to local requirements. UNIDO could specialize in industrial policy and promote the transfer of knowledge on appropriate industrial policy to developing countries;

- *Collection and dissemination of information.* This core activity in policy research is necessary to ensure the effective transfer of knowledge on industrial policies. A major practical function of UNIDO lies in collecting, publishing and disseminating comparative international statistics on industrial production and performance, a function that contributes to providing knowledge—an international public good;

- *Provision of skills and training.* In the context of technology, UNIDO could provide support in the form of training to facilitate the adoption and adaptation of new technologies, especially environmentally sound technologies;

- *Development and adaptation of technologies.* UNIDO could help governments to identify the technologies appropriate for their industrial policies, and support the process of adopting and adapting appropriate and environmentally sound technologies;

- *Support to regulatory and coordinating agencies.* There is no evident role for UNIDO as a regulatory agency, but, in conjunction with the policy transfer function, it could provide necessary advice for establishing industrial regulatory bodies. UNIDO has, however, a more obvious coordination role to play in support of new thinking and practices in industrial policy, in particular at the international level.

Achieving the best industrial policy is a national priority. One feature of industrial development is that it strengthens an economy and reduces the extent, if not the likelihood, of economic instability. It is beneficial for the global economy that all countries have stable and effective development, especially since instability in one country tends to have a contagious effect. Consequently, if countries have effective industrial policies, they become internationally beneficial, thus injecting an international public good element into industrial policy. It follows that an international benefit can be derived from coordinating industrial policies and promoting the transfer of good policy. Such action clearly identifies the role for UNIDO, as an international agency, in developing good practice and transferring industrial policy knowledge to developing countries.

III. Public goods and UNIDO support for industrial development

Chapter III of the report discusses the extent to which UNIDO technical assistance activities provide public goods and the implications for industrial development arising from those activities.

The public good aspects of UNIDO services have been identified through a mapping of service modules into the public goods framework introduced in chapter II of the report. Currently, UNIDO technical assistance activities are grouped under the following eight service modules (SM):

- Industrial governance and statistics (SM1)
- Investment and technology promotion (SM2)
- Industrial competitiveness and trade (SM3)
- Private sector development (SM4)
- Agro-industries (SM5)
- Sustainable energy and climate change (SM6)
- Montreal Protocol on Substances that Deplete the Ozone Layer (SM7)
- Environmental management (SM8)

Table 3 provides the results of the mapping exercise. The mapping is illustrative and does not cover all UNIDO activities. Overall, it can be concluded that almost all service modules contain activities that provide public and private goods, with the possible exception of the service module on industrial governance and statistics (SM1), where the activities seem to provide public goods only. Most modules include global forum activities, which could be classified as complementary knowledge public goods mainly because they facilitate the spread of international research findings.

Table 3. Mapping UNIDO's technical activities into a public goods framework

	Core activity	Complementary activity	
Public goods sector and spatial range	**Provision of public goods**	**Production of public goods**	**Consumption and utilization of public goods**
KNOWLEDGE	*Policy research*	*Research and transfer; training*	*Facilitating and disseminating; skills*
International	SM1 (Industrial Development Report, new research approaches) SM4 (policy tool box for private sector development)	SM1 (statistics)	Global forum activities of several modules
National	SM1 (economic policy studies) SM2 (technology foresight studies, competitiveness analysis, investor surveys)	SM2 (market information, matchmaking)	SM4 (support for Business Development Services facilitators and workshops to enhance entrepreneurship skills) SM5 (support for facilitating institutions and workshops to enhance technical skills)

Table 3. Mapping UNIDO's technical activities into a public goods framework *(continued)*

Public goods sector and spatial range	Core activity: Provision of public goods	Complementary activity: Production of public goods	Complementary activity: Consumption and utilization of public goods
QUALITY OF ENVIRONMENT	*Research on cleaner technology*	*Developing cleaner technology*	*Facilitate use of cleaner technology*
International			
National			SM6 (assist in the design and implementation of rural energy systems) SM7 (assist in the implementation of the Montreal Protocol) SM8 (assist private sector in adopting environmentally sound technologies through support institutions)
GOVERNANCE	*Policy coherence (good governance)*	*Institutions*	*Implementation*
International			
National	SM1 (capacity building for industrial policies) SM4 (capacity building to develop and implement SME policies) SM6 (enhance capacity to apply Kyoto guidelines) SM8 (environmental planning and policy formulation)	SM3 (establish standards institutions and testing laboratories) SM5 (institution building for food safety) SM8 (establish National Cleaner Production Centres and assist local government)	SM2 (support activities of investment promotion agencies) SM3 (support activities of standards institutions)

Source: COMPID Research Programme.

A. Implications for UNIDO's technical assistance

The public goods framework is one of many approaches that can be used to assess the appropriateness of support for industrial development. Other approaches include a minimal approach, a mandate-driven approach and a comparative advantage approach. Nevertheless, it is useful to review the implications for UNIDO by applying a public goods framework. A public goods framework implies that UNIDO would need to concentrate on the following core functions and requirements:

- A core function is the creation and transfer of policy knowledge, including building up knowledge on what type of industrial policy works where and under what circumstances, and how to design a good industrial strategy. UNIDO is well placed to provide such an international public good, since it is a specialized international agency mandated to promote industrial development, and could therefore act as the point of coordination at the international level. Sufficient capabilities would be necessary within UNIDO to generate knowledge, and also to facilitate the transfer of policy knowledge to developing countries so that international benefits from the public good can be derived. Although it would be of little interest for the private sector to be involved in producing such knowledge, public-private dialogue would nevertheless help to design appropriate policy interventions;

- A second core function is capacity-building in national governments and national institutions to promote sustainable industrial development. This includes cleaner production centres and technology and standards institutions. Those institutions feature public goods aspects, such as the development of standards, and could benefit from economies of scale. The private sector would therefore not be able to provide such governance public goods at an optimal level. Again, effective public-private dialogue would ensure that the provision of support bears more relevance to the private sector. Costs of initialization efforts (as opposed to normal operating costs) would likewise have public good aspects. Capacity-building at the mesolevel can also include support for private sector organizations, associations and intermediaries, as long as they are, in principle, open to all firms;

- The UNIDO Business Plan on the Future Role and Functions of UNIDO[2] implies a "discontinuation of separate enterprise-level interventions not linked to the institutional or policy level". A public goods framework would involve a more limited engagement with firms or private sector activities, and only if there are clear public good benefits that can be derived. International agencies, such as UNIDO, can seek to obtain international public goods, especially knowledge and environmental public goods, when interacting with individual firms. Creating an industrial supply capacity purely to supply private goods would be inappropriate within a public goods framework, as such goods could be provided on a commercial basis. However, initial support to secure capacity can have highly visible demonstration effects, and thus include knowledge public goods aspects. Facilitating the implementation of environmentally sound technologies at the firm level nevertheless provides a public good, namely a good-quality environment.

In a public goods approach, any engagement with individual firms would need to be clearly defined on the basis of a pre-assessment of the relevant market and its failures, and of obstacles to enhancing firm performance; linked to a clear exit strategy, involving, in particular, the initiation of certain processes or associations; and supported by clear evidence suggesting how benefits can be, or have been, transferred to firms other than the firm receiving direct support.

It is important to note that technical assistance cannot be decided solely on the basis of its public goods content. There are various examples of support organizations that use a combination of assessment frameworks, culminating in the use of "rules of thumb". International development agencies will also have to be guided by development objectives, such as the Millennium Development Goals set forth in the United Nations Millennium Development Declaration,[3] and more specific preset criteria.

The benefit of the public goods framework is that it provides clear guidelines on fair competition between public support and private sector activities. As long as public support concentrates on providing public goods, distortion of the market can be kept at a minimum.

[2]Adopted by the Industrial Development Board on 27 June 1997 (decision IDB.17/Dec.2) and endorsed by the General Conference on 4 December 1997 (resolution GC.7/Res.1).

[3]General Assembly resolution 55/2 of 8 September 2000.

The main conclusions that result from applying the public goods framework are that UNIDO would have to enhance its capabilities in the area of knowledge creation and transfer (international knowledge public goods). UNIDO, as a specialized agency for industrial development, must strengthen its research capacity with a view to generating international knowledge public goods, for example, knowledge on the effectiveness of industrial policy and other policies that affect industrial development. On the other hand, it would need to adopt a more focused approach when dealing with individual firms. The conclusions drawn become even more imperative in a new environment for industrial development and globalization processes as discussed in chapter I of the report.

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