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INTEGRATING ISRAEL INTO THE INTERNATIONAL DEVELOPMENT INDUSTRY

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INNOVATION & INTERNATIONAL DEVELOPMENT WORKING PAPER #1

INTEGRATING ISRAEL INTO THE INTERNATIONAL DEVELOPMENT INDUSTRY

Executive Summary

The world's economic landscape is rapidly changing. The growing markets of the future are not to be found in North America or Western Europe, but in the economies of Asia, Latin America, Africa and the former Soviet bloc. Demand patterns for new technologies are also changing. With the advance of climate change and its effects on world weather patterns, demand for technologies in fields of water, agriculture and renewable energy are growing considerably, particularly in Latin America, Asia and Africa – the three continents most affected by climate change. In addition, there are new opportunities for Israeli exporters to be found in the high growth rates of consumer markets in these continents and the expected influx of large levels of international development aid funds for technology transfer, in the framework of the United Nations Framework Convention on Climate Change.

If Israeli technology industries wish to grow in coming decades, they must find ways to provide these markets with needed technologies. As both global firms and innovative local companies in countries like China, India, and Brazil, increasingly develop technology products specifically targeted to developing country markets, Israel will need to do the same to remain competitive. For this to happen, Israeli firms will have to change the way they do business in Asia, Africa and Latin America.

The Government of Israel needs to develop new policy tools to help advance product development for and exports to these markets. The current basket of policy tools, aimed mostly at developed markets, is not fully appropriate for the challenge. This paper proposes a new strategy for accessing non-OECD markets which goes beyond better marketing tools to policy mechanisms which:

- Better communicate specific **needs of local markets** to Israeli entrepreneurs.
- **Facilitate partnerships** between Israeli firms and target market researchers, entrepreneurs and companies.
- C**reate new mechanisms for financing innovation** for these markets
- Support **product demonstration and business development** in the ways most suitable for these markets.

The TAU Program on Eco-Innovation and International Development, in cooperation with the Foreign Trade Administration and MATIMOP at the Israeli Ministry of Industry, Trade and Labor, is dedicated to elaborating a wide range of policy mechanisms that can help meet these aims. The goal is the creation of an Israeli development industry focused on supplying solutions to the development and climate needs of developing countries. The potential market of this industry goes beyond

contracts financed by international institutions, such as the World Bank and the UN, to government procurement and private sector purchases for meeting development needs such as water, food security, ICT and energy.

Just as the Yozma program unleashed the vast potential of Israel's high-tech industry, transforming a small industrial sector into the international powerhouse we know today, new policy measures can be used to remove the barriers to creation of an Israeli international development industry. **The goal is not only to enable existing firms to expand and grow in developing countries, but to facilitate the creation of new and unimagined firms that do not have the infrastructure to grow today.**

Scope of Research

This paper is the product of scoping research conducted from November 2010-June 2011, involving consultations with:

- Israeli private sector representatives presently exporting to Asia and Africa in the fields of water, agriculture and renewable energy;
- Key public sector officials in Israel;
- Representatives of international organizations abroad;
- Experts from Israeli and international academic institutions.In addition, a comprehensive review of current research on technological innovation for developing country markets was conducted.

Developing Countries are Emerging as Important Markets for Technology Exports

> "This decade will mark the tipping point in a fundamental long-term economic rebalancing that will likely leave traditional Western economies with a lower share of global GDP in 2050 than they had in 1700."[1]

1. There is strong growth in demand for energy, food and water technologies.

The Trend: Average growth rates in the East Asia and Pacific Region (8.9%), South Asia (6.6%), Africa (4.6%) and Latin America (3.3%) have been significantly higher than the OECD average of 1.65% in the past decade.[2]

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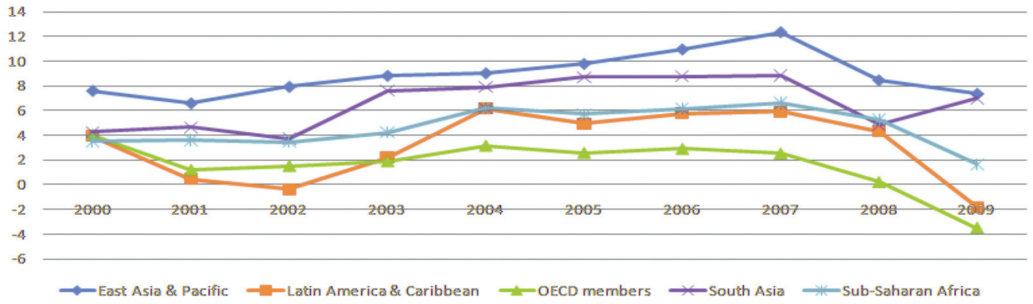
[1] McKinsey&Co., 2010, The Great Rebalancing, McKinsey Quarterly.

[2] Kempener, R., Anadon, L. D., and Condor, J., 2010, Governmental Energy Innovation Investments, Policies, and Institutions in the Major Emerging Economies: Brazil, Russia, India, Mexico, China, and South Africa, Discussion Paper No. 2010-16. Harvard Kennedy School Energy Technology Innovation Policy Discussion Paper Series. Cambridge, MA.

Figure 1- Annual % of GDP Growth by Region



Source: www.data.worldbank.org

This boom has led to a commensurate surge in demand for energy, food and water infrastructure. Today, six developing countries, China, Brazil, Russia, India, Mexico and South Africa, account for one third of all energy demand[3] and emerging economies already have more than 50% of existing renewable electricity capacity, more than 70% of existing solar hot water capacity and 45% of biofuels production.[4]

Energy demand is also rising fastest in emerging economies.[5] Over the 2005-2030 period, increased energy demand in China and India is expected to account for 45% of the increase in world energy demand.[6] Demand for renewable energy between 2005 and 2030 is expected to grow at around 10% annually in China and India, far outpacing the projected global growth of 6.7%.[7]

Global water requirements are expected to exceed the accessible reliable supply by 40% by 2030 due to economic and population growth[8] mainly occurring in developing countries. Between $678 billion and $767 billion will be required in developing countries by 2030 to meet additional water demand due to climate change, economic growth, and population increases.[9] Demand for food is expected to double within the next 25-50 years, primarily in developing countries,[10] where there will be an extra 2-2.5 billion mouths to feed by 2050.[11]

The opportunity: Growing demand in these fields in developing countries provides a substantial opportunity for Israeli exporters. Israel has an important and growing presence in the water technology, agri-tech and renewable energy sectors, three of the most high-growth areas of developing world

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3 Ruud Kempener, Laura D. Anadon, and Jose Condor, 'Governmental Energy Innovation Investments, Policies, and Institutions in the Major Emerging Economies: Brazil, Russia, India, Mexico, China, and South Africa', Discussion Paper #2010-16. Energy Technology Innovation Policy Discussion Paper Series (Harvard Kennedy School, November 2010). http://www.eenews.net/assets/2010/12/17/document_cw_01.pdf

4 REN21, 2009, 'Renewables 2007 Global Status Report', cited in Sadorsky, P. 'Renewable Energy Consumption and Income in Emerging Economies', Energy Policy No 37.

5 Sadorsky, P. 2009, 'Renewable Energy Consumption and Income in Emerging Economies', Energy Policy No 37.

6 IEA, 2007, World Energy Outlook 2007, International Energy Agency/OECD, Paris.

7 ibid.

8 OECD, 2010, OECD Science Technology and Innovation Outlook 2010, Paris.

9 IFC. 2010, Climate Risk and Financial Institutions. Washington, DC.

10 GECAFS, 2009, 'Food Security and Global Environmental Change: Emerging Challenges', Environmental Science and Policy 12, 373-377.

11 Cordell, D., Drangert, J.O. and White, S., 2009, 'The Story of Phosphorus: Global Food Security and Food for Thought', Global Environmental Change 19, 292-305.

demand. In 2008, the Israeli clean-tech industry consisted of 482 companies including 168 in the water field, 225 in renewable energies and 89 in the environmental field,[12]not including the many existing project engineering, agriculture and nano-tech companies in related fields. Israeli clean-tech companies are also recognized as amongst the most innovative in the world. Five Israeli based companies and two that originated in Israel are listed in the 2010 "Global Cleantech 100" ranking of "most promising" cleantech companies. Only the US, UK and Germany have more companies in the list. However, the full potential of these sectors has yet to be realized. To date, only a small percentage of Israel's exports in these fields have reached non-OECD markets, despite burgeoning demand.

2. Accelerated urbanization in developing countries.

The Trend: the year 2008 was a turning point in the history of humanity. For the first time more people are living in urban areas than in farm areas around the world. In fact, by 2030 over 60% of the global population will live in cities,[13] with 60% of that growth occurring in Asia. Mumbai for instance, has experienced already a surge in population, going from 3 million citizens in 1995 to the current figure of over 20 million.[14]

The implications of urbanization for economic growth, industrial development and international trade are significant. A McKinsey report expects Chain's cities to produce over 90% of the national GDP by 2025.[15]

The opportunity:

Urbanization will create demand in areas of Israel's expertise:

- **Urbanization increases water use**. Urbanization results in increasing demand for water for private use, the industrial sector and industrialized agriculture. According to forecasts, water resources accessible to the Indian citizen, may fall from 105 liters per person per day to only 65 liters per day. Cities also need sophisticated sewer systems in order to maintain sanitation levels. In Indonesia, the Philippines and Vietnam large investments are being made, with the support of the World Bank, on management of the sewer system.[16] This presents an opportunity for Israel's water industry.
- **Industrial agriculture and the food industry.** The growth of population in urban areas will result in an increase in the demand for food in these areas as well as the growth of rural infrastructure and industries specializing in food production and processing transporting food from the fields to the city markets.[17] Israel's expertise in advanced agriculture and agritech is extremely relevant for meeting these challenges.
- **Rise in public expenditure on homeland security (HLS)**. The increase of slums in developing

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[12] Ernst&Young, 2009, Promotion of Israel's Cleatech Industry, Ernst & Young, Tel Aviv (HEBREW)

[13] United Nations, 2008, World Urbanization Prospects The 2007 Revision, Department of Economic and Social Affairs, Population Division, New York.

[14] ibid.

[15] Woetzel J. et.al, 2009, Preparing for China's Urban Billion, McKinsey Global Institute, Shanghai.

[16] UN, 2011, Water of Cities: Responding to the Urban Challenge, UN Water, Technical Paper.

[17] Romanik, C.T., 2007, An Urban-Rural Focus on Food Markets in Africa, The Urban Institute.

world cities has resulted in rising crime levels.[18] The World Bank, among other development agents, finances projects in South Asia aimed at alleviating violence and crime.[19] Israel's HLS industry is among the leading in the world and already provides security services, monitoring devices, tracking and control devices, means of policing and other products to countries seeking to improve personal safety and securing law and order.

- **Rise in expenditure on health services.** The rise in the standard of living and private consumption in many developing countries, along with the growth in the middle class, the pressure on the sewer systems and rising pollution, have resulted in both greater demand for health services and new health challenges and diseases different from those encountered in rural areas. As a result, the expenditure on health services in developing countries is expected to rise. This is already the case in China today.[20] This situation creates opportunities for Israel's life sciences industry.
- **The urbanization process leads to a rise in energy demand**. The increased use of electrical devices, the addition of electrical infrastructure such as street lighting and traffic lights and the tremendous growth in use of computers will increase the demand for energy resources. For example, China is expected to face a giant leap in energy demand due to its accelerated urbanization process. Therefore, an increase in demand for energy saving devices and alternative energy resources is expected.[21] Israel can provide advisory services in the field of energy management and development of alternative energies such as bio-diesel, solar energy and hydropower.
- **High investment on construction.** City construction involves huge investments in housing, road construction and public transportation systems. One estimate predicts the property stockpile of Indian cities will expand to an area the size of Chicago every year.[22] This growth offers opportunities to Israeli companies in the field of engineering, infrastructure, property and architecture.

3. Strong growth in consumer demand as earning potential expands.

The trend: Growth in developing countries is generating unprecedented consumer demand. For example, the global vehicle fleet is set to increase from around 800 million today to 2-3 billion by 2050. Almost all of this growth will take place in developing and transitional countries.[23]

Even in the world's poorest continent, Africa, consumer spending is rising significantly. Eighty million African households now earn at least the equivalent of $5,000 annually, the point where discretionary

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[18] Bourguignon, F., 2009, 'Crime as a Social Cost of Poverty and Inequality: a review focusing on developing countries', Revista Desarrollo Y Sociedad, Universidad de Los Andes-Cede.

[19] World Bank, 2009, Systems of Cities: Harnessing Urbanization for Growth and Povrty Alleviation South Asia- The World Bank Urban and Local Government Strategy, The International Bank for Reconstruction and Development/The World Bank.

[20] Galea, S., Freudenberg, N., Vlahov, D., 2004, 'Cities and population health', Social Science & Medicine 60, 1017–1033.

[21] Jiang L., et.al, 2008, Population, Urbanization and Environment, World Watch Institution.

[22] Sankhe S. et.al ., 2011, India's Urban Awakening , McKinsey Global Institute, Delhi

[23] UNEP, 2010, Green Economy 2010- Green Economy Report: A Preview, United Nations Environment Programme, Division of Technology, Industry and Economics, Chatelaine-Switzerland.

spending commences, an increase of 80 percent in eight years,[24] and technology has become an increasingly important component of African spending. For example, today there are more cell phones and cell phone related technologies sold in Africa every day than in all of North America. Similarly, eco-friendly off-grid solutions for household water and energy supply are increasingly in demand throughout Africa, including such innovations as solar-powered lighting units and household water purification technologies. Growing African demand and purchasing power, while not a major economic force today, is likely to become one in the future, prompting McKinsey to conclude: "If you are a multinational…you can not afford not to think about [Africa]. And if you want to move, we think you need to move now because the cultures with longer-term thinking, especially Asia, are moving now."

The opportunity: Israel has not yet made significant inroads into developing country consumer markets. While Israeli exports to developing countries, especially Asia, have increased since the financial meltdown in the West, the vast majority of exports to these markets are not aimed at consumers. The two leading exports to Asia are diamonds and micro-chips, both bound for processing at factories in Asia before being shipped to consumers in Western markets. Fertilizer and plastics (for irrigation) do appear among the chief exports, but in the service the agricultural sector and not the consumer market.[25]

Interviews with private sector representatives conducted in the context of this research indicated that Israeli firms do not generally today develop products for developing country consumer markets. This is largely because they are at a disadvantage in terms of distribution networks and ability to mass-produce inexpensive technological products.

However, Israel can take advantage of these markets by selling core technologies or R&D services to MNCs active in these countries or through partnering with local firms to develop products targeted to these markets. Some Israeli researchers and entrepreneurs have already used this route to market innovations to the developing world, selling technologies such as personal water purification straws to European companies active in the developing world, who then took responsibility for mass production and marketing of the product.[26]

4. The amount of international development financing available for technology development and purchase is poised to grow markedly in coming years.

The trend: According to OECD figures, international development assistance was a $123 billion industry in 2008.[27] Moreover, in the coming years, international efforts to reduce emissions and mitigate the effects of climate change on developing countries are poised to lead to substantial increases in international financing for technology purchase, particularly in the fields of water, agriculture and renewable energy. Developed countries have committed, as part of the international climate change negotiations, to allocating $100 billion annually for development and transfer of climate technologies for the developing world. Additional resources of US$25-US$30 billion, covering the period 2010-2012, are being made available now.[28]

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[24] McKinsey&Co., Can Africa Continue to Grow?, McKinsey Quarterly, August 2011

[25] Israel Central Bureau of Statistics, Israeli Exports to Sub-Saharan Africa, The Ministry of Industry, Trade, and Labor, 2010. (HEBREW)

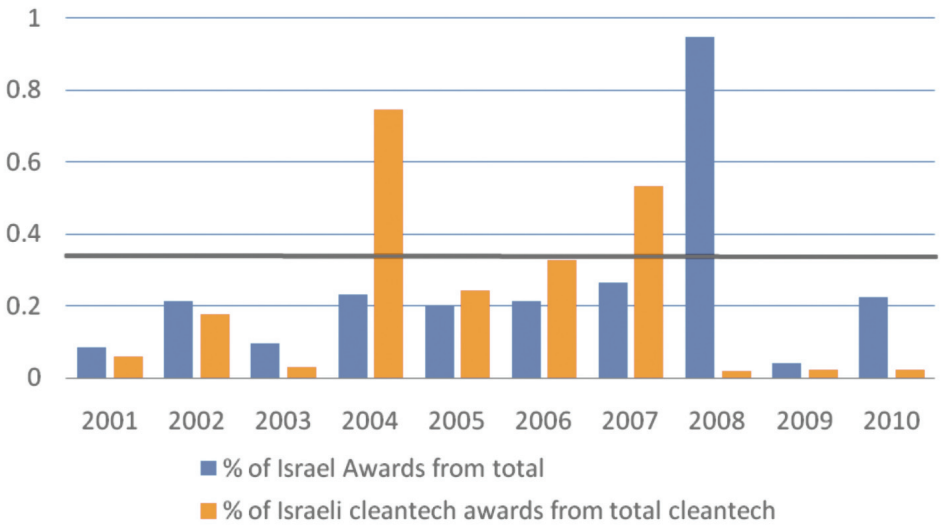
[26] Interview with Dr. Moshe Fromer Purofilter lifestraw 16.12.2010

[27] Anup S., 'Foreign Aid for Development Assistance', Global Issues. 25 Apr. 2010. Web. 04 May. 2011. [available at http://www.globalissues.org/article/35/foreign-aid-development-assistance]. ; DAC-OECD, 2010, Development Co-operation Report 2010, OECD, Paris. ; OECD, 2010, 50 Years of official development assistance, [available at http://www.oecd.org/document/41/0,3746,en_2649_34447_46195625_1_1_1_1,00.html]

[28] UNFCCC, 2011, 'Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010. Decisions adopted by

The opportunity: At present, Israeli companies and experts barely benefit from international development funds. For example, over the 2001-2010 period, the median percentage of World Bank contract amounts awarded to Israeli companies from total contract values was 0.21%, well below Israel's 0.34% share of global GDP. Israel's share of clean-tech contracts (agriculture, renewable energy, water and sanitation) was even smaller, representing only a median of 0.12% of total contracts awarded in this period.[29] In comparison, data from the 2006-2010 period indicates that the top four OECD contract winners far outpaced Israel on contract earnings: Italy (4.5% of total contract awards), Germany (2.8%), France (2.4%), Spain (2.0%).[30]As the graph below demonstrates, in only one year in the past decade did Israel's share of total contract amounts awarded reach Israel's share of the global economy, and in only two years was Israel's share of cleantech contracts over its share of the global economy.

Figure 2- Israeli World Bank Contract Awards as % of Total[31]



Developing Countries are Changing in Ways that Require Israel to Re-think its Policies

> "If GE's businesses are to survive and prosper in the next decade, they must become…adept at reverse innovation… Success in developing countries is a prerequisite for continued vitality in developed ones."[32]

1. Developing countries are emerging as sources of innovative technologies.

The trend: Some developing countries are now making significant investments in technology development. In 2008, China, Brazil, Russia, India, Mexico and South Africa invested more in energy innovation ($13.8 billion), than the 24 member-countries in the International Energy Agency,

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the Conference of the Parties', Article IV A 98. ,[available online at: http://unfccc.int/files/na/application/pdf/07a01-1.pdf].

29 Data from World Bank procurement database [available at http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,menuPK:51565~pagePK:95864~piPK:95915~theSitePK:40941,00.html]. Total contract awards represent only World Bank-financed contracts reviewed by Bank staff prior to award. In total, this figure represents approximately 7-9 billion dollars from a total of 20 billion dollars disbursed annually by the World Bank.

30 World Bank, 'Prior Review Contracts Under IDA/IBRD-Finance Projects. Summary Report by Fiscal Year and Supplier 2001-2010' Internal World Bank document.

31 Ibid.

32 Immelt R.J, Govindarajan V., Trimble C., 2009, 'How GE is Disrupting Itself', Harvard Business Review, October, 2009.

including the United States and United Kingdom.[33] Moreover, a growing number of MNCs have begun setting up R&D facilities in the developing world. Thus, according to the Economist:

> "Companies in the Fortune 500 list have 98 R&D facilities in China and 63 in India. Some have more than one. General Electric's health-care arm has spent more than $50m in the past few years to build a vast R&D centre in India's Bangalore, its biggest anywhere in the world. Cisco is splashing out more than $1 billion on a second global headquarters—Cisco East—in Bangalore, now nearing completion. Microsoft's R&D centre in Beijing is its largest outside its American headquarters in Redmond. Knowledge-intensive companies such as IT specialists and consultancies have hugely stepped up the number of people they employ in developing countries. For example, a quarter of Accenture's workforce is in India."[34]

The emergence of the developing world as a competitive source of innovation is likely to transform product development, trade and investment patterns between OECD and non-OECD countries. Emerging research on innovation trends suggests that there are certain advantages to developing-country based innovation:

- Developing countries have better insights into local needs, capacities and culture. This enables them to develop products that are more competitive in developing world markets. Thus, for example, the Economist has asserted that, "China is ideally placed to be the world's middleman: close enough to the frontier of innovation to keep up with the latest developments, and skilled at adapting new ideas for the mass market."[35]
- Countries such as India andChina tend to be better at "frugal innovation", i.e. innovation of low-cost products.
- There is a growing amount of evidence of the profitability of "reverse innovation", i.e. developing cheaper, less sophisticated technologies in developing markets and then adding features to adapt technologies to the demands of developed markets. The most well-known example of this theory in action is that of General Electric, who developed a cheaper EKG in India which rendered more expensive, complex EKG machines used in developed countries virtually obsolete.

The opportunity: Today, there is very little research collaboration between Israeli companies and those in developing countries. This is beginning to change, though. For example, the Chief Scientist's Office's joint industrial research program with the Jiangsu province of China has been so successful both in terms interest and of approved projects that Israel has since signed a renewed Memorandum of Understanding with China providing for the establishment of similar programs elsewhere in the country – most recently with the government of the Shanghai municipality. Israel can leverage growing innovation capacity in India, China and Latin America by marketing itself as a complementary source of expertise to their growing importance as "technology middlemen". In other words, Israeli entrepreneurs can work through local firms not only to facilitate production and distribution of Israeli technologies but also to develop products which are better targeted to local needs and preferences. This can be done in two ways:

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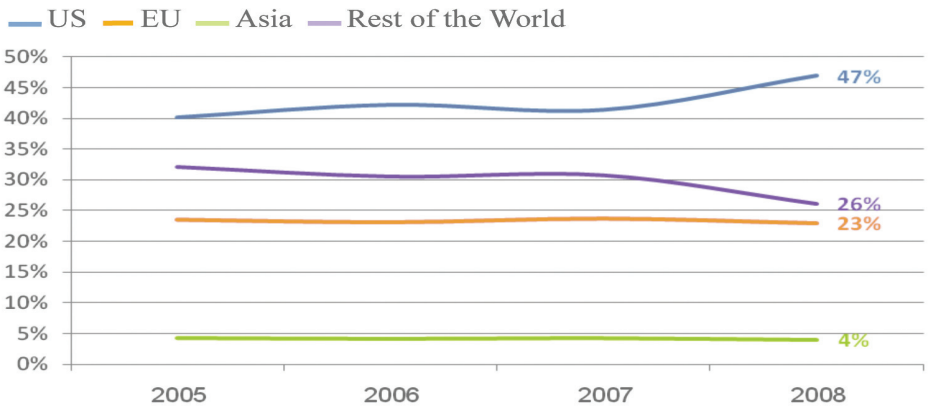
[33] Kempener, R., Anadon, L. D., and Condor, J., 2010, Governmental Energy Innovation Investments, Policies, and Institutions in the Major Emerging Economies: Brazil, Russia, India, Mexico, China, and South Africa, Discussion Paper No. 2010-16. Harvard Kennedy School Energy Technology Innovation Policy Discussion Paper Series. Cambridge, MA.

[34] The Economist, 'A Special Report on Innovation in Emerging Markets', April 15, 2010.

[35] The Economist, 'Bamboo Innovation', May 5, 2001.

- Through joint research and development between Israeli and developing-world companies with a view to developing products for those markets. R&D partnerships can help Israeli companies expand into and profit from developing country markets. Through collaborative product development with emerging economies, Israel can take advantage of these economies' ability to serve as a bridge between Israel's sophisticated technological innovation capacities and the growing demand for appropriate technologies targeted to developing country markets. Larger Asian companies such as Tata have already started investigating the potential for harnessing Israeli knowhow for their product line. This can become an increasingly profitable sector in future.
- By marketing R&D services to innovative developing-world companies. R&D expertise accounts for the largest portion of Israel's business service exports. As the graph below shows, very little R&D is exported to Asia. The "rest of the world" is dominated by Switzerland, Canada and Russia – not developing countries in Africa or Latin America. Marketing Israeli R&D services to large emerging market companies could provide new opportunities to Israeli engineers and researchers.

Figure 3 - Distribution of Israel's Business Services Export by Region



2. Large investments by the international community in the innovative capacity of developing countries may provide new entry points for Israel into emerging markets.

The trend: Global investment in developing country capacity to both innovate and better manage the process of technology procurement is particularly strong in the field of climate change mitigation and adaptation. Thus, for example, the World Bank is proposing to develop climate innovation centers in developing countries which will function as technology incubators as well as helping innovators find financing for local projects, signaling demand to global technology providers, and interfacing with governments on relevant standards, policies and legislation. In addition, a large number of development financing is going into training developing country government officials to be able to better identify, procure and deploy needed global technologies. Finally, negotiations are underway under the aegis of the UNFCC to set up an international body or mechanism to facilitate global eco-innovation and technology transfer.

The opportunity: Emerging international mechanisms for technology transfer and developing country "innovation centers" provide possible future entry points for Israeli entrepreneurs and exporters

interested in expanding into these countries. These mechanisms aim to simplify and accelerate the process of technology transfer to developing countries. By reducing entry barriers to developed country technology markets and serving as focal points for market information, these mechanisms can address some of the challenges that have prevented Israeli technology companies and innovators from penetrating developing world markets in the past.

Israel is active in the various international discussions (OECD, World Bank, UNFCC) focusing on the creation of a new climate change technology transfer framework. When this framework is established, policy mechanisms may be used to better enable Israeli business to tap into these facilities.

Table 1: Summary of Changes in Developing Countries and Israel's Status

Trend in Developing Countries	The Opportunity
Growing demand for energy, water and agricultural technologies.	Several Israeli firms on the leading edge of technologies in these fields, but currently market shares remain low, particularly in developing countries.
Accelerated urbanization in developing countries.	Israel holds the knowledge relevant to this process, yet doesn't have a structured plan focused on cities of the future.
Growing consumer demand.	Few examples of Israeli firms successfully accessing the growing consumer market of developing countries. Sales of core technologies to mediating firms, product development partnerships and export of R&D services can help tap into lucrative markets.
Growing development assistance budgets.	Israeli firms have not been adept at winning contracts historically. MOITAL's new programs support companies interested in submitting bids for contracts. Additional policy mechanisms to support development of products and services targeted to this sector may further expand Israel's market share.
Growing innovative capacity in developing countries.	Potential partners for joint R&D are expanding in many developing countries. Such partnerships can help ease barriers to entry to these markets.
International work on tech-transfer infrastructure.	Israel is active in the various international discussions focusing on the creation of a new technology transfer framework. When this framework is established, policy mechanisms may be used to better enable Israeli business to tap into them.

What Role for the Government of Israel in Enhancing Access to Developing Country Technology Markets?

Israel has many advantages favoring its successful integration into these new markets.Yet, increases in Israeli exports to developing countries require changes in the way Israeli companies and the Government of Israel work in these markets. The Foreign Trade Administration is keenly aware of this issue and has identified a number of possible tools to increase the exports of existing firms, including:

- Advancing Free Trade Agreements and Technology Cooperation Agreements with target countries in the developing world;
- Expanding the network of economic attaches and the products they provide to exporters;
- Support for firms interested in applying to international financial institution tenders;
- Increasing the frequency and quality of business delegations and exchanges with target countries;
- Support for demonstration and worker relocation.

However, Israeli technology companies generally approach non-OECD countries as markets of second resort, adapting technologies which have proved successful first in OECD markets. These technologies are likely to be increasingly uncompetitive as emerging economies develop the capacity to generate technologies more targeted to their needs and other foreign companies begin to innovate specifically for these markets.

The goal must be **new product development targeting emerging market needs** in key areas such as water, agriculture and renewable energy that may serve as a springboard for growth in these regions.

Through a series of interviews with policy makers and Israeli entrepreneurs active in these countries, round-table discussions and research, **we have identified four primary obstacles preventing the Israeli market from exploiting the full potential of the developing country markets.** The government can facilitate this shift by advancing policies that would remove these four constraints.

- **Overcoming Knowledge Issues –** The Government of Israel should see providing better market information to Israeli entrepreneurs as a primary goal. Israeli technology entrepreneurs are intimately connected to the market needs of Western economies through myriad channels, including VC firms, R&D centers, branch offices in Western countries, etc. This level of familiarity is lacking for developing country markets and is necessary in order to facilitate development of appropriate, marketable technologies for the international development industry. **The government should develop frameworks that enhance the flow of market knowledge to Israeli firms, both directly from developing country markets and through emerging international mechanisms for technology transfer and collaborative innovation.**
- **Forging Partnerships –** In most developing countries it is virtually impossible to function without the support of local partners with intimate knowledge of local markets, institutions

and culture. Partners are not only essential for marketing and distribution of exported Israeli technologies but also for obtaining market knowledge and developing new technologies that are targeted to local needs, culture and market conditions. **Israeli policy can help support identification of reliable partners and forging of mutually beneficial partnerships for new product development**. This is particularly important in research and development of new products.

- **Familiarizing the Israeli Financial Sector with Developing Country Challenges –** The success of the Israeli business sector depends on a financial sector that is able to fund development and expansion. In many of the interviews conducted in the context of this research, the difficulty of acquiring finance was noted as a key issue. The financial sector's lack of involvement in these markets stems partly from perceptions of increased risk and lack of understanding of doing business in developing countries. The government of Israel has used ASHRA in the past, but sound policy should seek tools that could **encourage the domestic private financial sector t**o familiarize itself with developing markets.

- **Overcoming Demonstration and Business Development Issues** – Technology demonstration in the local context is critical both to aid adaptation of technologies to local needs and to support marketing, dissemination and correct use of Israeli technologies. The government of Israel should seek to expand technology demonstration and business development abroad in its toolkit, through support to industry through MOITAL, as planks of bi-lateral economic cooperation agreements, and in relevant multi-lateral discussions.
  The proposals of the Shani Committee on expanding exports to China and India tackled this issue. MOITAL is currently designing the necessary regulations to implement the decision. A complete demonstration and business development package should include elements such as land and facilities for product installation, capacity building and training for potential future clients, support in meeting local standards and regulations, introductions to potential local partners, and connections to possible sources of finance for large scale implementation.

Conclusions

The above list of policy proposals in indicative only. Further research and consultations, both in Israel and internationally, would be necessary in order to develop a full policy package. It is important to note at this phase, however, that these proposals should not be viewed as stand-alone ideas, but rather as part of a policy package representing a shift in approach to developing world markets.

As non-OECD countries become more important both as consumers and providers of technology, Israel must adapt in order to take advantage of these changes. For this to be possible, the Israeli technology sector must develop stronger ties with counterparts in emerging markets in order to develop products specifically geared to the needs of emerging markets. The Government of Israel can support this change by broadening its support tools from ones geared toward better marketing of existing products to ones that facilitate and incentivize the creation of a new, innovative Israeli development industry.

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