AEB

Институт Современного Развития

ASSOCIATION OF EUROPEAN BUSINESSES IN THE RUSSIAN FEDERATION

Modernisation of the Russian Economy: Input of European and Russian Businesses

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инвестиционная компания

November 24th, 2009
INSOR, Moscow

ASSOCIATION OF EUROPEAN BUSINESSES
IN THE RUSSIAN FEDERATION

Modernisation of the Russian Economy: Input of European and Russian Businesses

Opening Remarks

Igor Yurgens, Board Chairman, INSOR
Reiner Hartmann, Board Chairman,AEB

November 24th, 2009
INSOR, Moscow

ASSOCIATION OF EUROPEAN BUSINESSES
IN THE RUSSIAN FEDERATION

Modernisation of the Russian Economy: Input of European and Russian Businesses

Session 1
Legislative Regulation of the Innovating Activities

November 24th, 2009
INSOR, Moscow

Conference: Modernisation of the Russian Economy: Input of European & Russian Businesses

BAKER & MCKENZIE

Intellectual Property Rights Defense as One of the Key Elements of Innovative Economy

Денис Хабаров

Партнер

Baker&McKenzie

24 ноября 2009 г.

Инновационная деятельность

Инновационный процесс – это единственный в своем роде процесс, объединяющий науку, технику, экономику, предпринимательство и управление. Он состоит в получении новшества и простирается от зарождения идеи до ее коммерческой реализации, охватывая таким образом отношения по производству, обмену, потреблению*.

*__Джеймс Брайт__, американский экономист, профессор Гарвардской Школы Бизнеса (1959-1969).

Инновационная деятельность

Постановление Правительства РФ от 24.06.1998г.
«О концепции инновационной политики Российской Федерации»:

- «инновационная деятельность» - процесс, направленный на реализацию результатов законченных научных исследований и разработок либо иных научно-технических достижений в новый или усовершенствованный продукт, реализуемый на рынке, в новый или усовершенствованный технологический процесс, используемый в практической деятельности, а также связанные с этим дополнительные научные исследования и разработки.

- «инновация (нововведение)» - конечный результат инновационной деятельности, получивший реализацию в виде нового или усовершенствованного продукта, реализуемого на рынке, нового или усовершенствованного технологического процесса, используемого в практической деятельности

Инновационная политика государства

Управление и стимулирование инновационного процесса на государственном уровне. В промышленно развитых странах она как правило направлена на создание благоприятного климата для осуществления инновационного процесса.

Методы воздействия государства в области инноваций:

- прямые (как правило, административно-ведомственной и программно целевой формах)
- косвенные (т.е. направленные на как на стимулирование самих инновационных процессов, так и на создание благоприятного климата для новаторской деятельности.

Значение охраны и защиты объектов интеллектуальной собственности как элемента инновационной политики государства.

Законодательство об интеллектуальной собственности – важнейший элемент инновационного процесса и механизма воздействия государства на инновационные процессы и инновационную деятельность.

Функции законодательного регулирования в сфере интеллектуальной собственности:

- ✓ Закрепление прав на результат интеллектуальной деятельности («РИД»)
- ✓ Стимулирование создания и охрана прав автора охраняемого РИД
- ✓ Возможность свободного использования и коммерциализации охраняемых РИД
- ✓ Возможность пресечения незаконного использования охраняемых РИД третьими лицами

Зарубежный опыт. Япония

- По общему правилу владельцем патента на патентоспособный РИД, созданный работником, становится сам работник. Работодатель имеет право на бесплатную неисключительную лицензию (ст. 35 Патентного Акта Японии). НО на практике можно предусмотреть иной порядок, в соответствии с которым работодатель, а не работник будет являться патентообладателем, или же работодателю предоставляется исключительная лицензия.
- Ситуация диаметрально противоположная с авторскими правами на РИД и секретами производства, созданными в рамках служебного задания (ст. 15 Закона об авторском праве).
- Закрепление необходимости вознаграждения создателя служебного патентоспособного РИД работодателем; отсутствие необходимости вознаграждения в отношении созданных а рамках служебного задания объектов авторского права и секретов производства
- Приобретение работником прав на РИД, созданный работником на мощностях и с использованием ресурсов работодателя.

Зарубежный опыт. Германия

- По общему правилу владельцем патента на патентоспособный РИД, созданный работником, становится работник (Закон о служебных изобретениях). Четырехмесячный срок для перехода прав к работодателю. Новые изменения в закон предусматривают автоматических переход прав
- Отдельное регулирование для патентоспособных РИД, созданных по проектам, субсидируемым Министерством Исследований и Образования
- Приобретение работодателем прав на РИД, созданный работником на мощностях и с использованием ресурсов работодателя.
- Закрепление необходимости вознаграждения создателя служебного РИД работодателем. При этом Законом о служебных изобретениях предусмотрены критерии для определения такого вознаграждения. Вознаграждение должно охватывать создание, передачу и использование РИД. Отдельная система расчета для сотрудников научных учреждений ((!!!) До 30 % от выручки от использования изобретения). Специализированный орган по рассмотрению споров, связанных с размером вознаграждения – Арбитражная панель при Германском патентном ведомстве.

Зарубежный опыт. Китай

- Широкий объем государственного финансирования предусмотрен Законом «О науке и технологическом прогрессе». Закон предусматривает ряд целевых государственных фондов по поддержке тех или иных видов деятельности в различных отраслях науки и техники. При этом в соответствии с Законом обладателем прав на РИД, созданное в рамках программы государственного финансирования, является лицо (компания), создавшая такой РИД.
- Закон «О науке и технологическом прогрессе» также предусматривает целую систему премий/грантов за выдающиеся достижения компаний / физических лиц.
- Законом предусмотрен ряд налоговых льгот для предприятий, занимающимся разработкой или производством высокотехнологичных товаров или вложением средств в высокотехнологичные предприятия малого и среднего размера (законом предусмотрен целый ряд критериев для отнесения предприятий к таковым).

Вопросы законодательного регулирования инновационной деятельности с РИД в

- Существенные изменения внесены с принятием Части IV ГК РФ.
- Направления для возможного развития:
  - ✓ Налоговое стимулирование деятельности по созданию РИД.
  - ✓ Создание стимулов для коммерциализации бюджетными учреждениями имеющихся у них охраноспособных РИД.
  - ✓ Упрощение порядка регистрации лицензионных договоров / договоров отчуждения на РИД.
  - ✓ Выработка критериев для определения вознаграждения авторов РИД.

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Tax and Customs Issues Relating to Innovations

Charles-Henri Roy
Partner, CMS Russia

AEB, November 24, 2009

Table of Contents

Introduction

What is an innovation?

— Innovative Activities

- Creation and manufacture of new products (services, works);
- Creation and improving manufacturing methods (technologies) of production, distribution and application;
- Application of structural, financial, economic, human resources, data and other innovations ensuring costs savings or creating conditions for such savings when manufacturing and selling the products;
- Activities aimed at obtaining new knowledge for resolving technological, engineering, economic, social, humanitarian and other problems and providing for the functioning of science, technology and production as a unified system.

— Innovation products

The results (goods, services, works) of innovative activities intended for sale.

General Tax and Customs Incentives

IP rights, R&D,Energyefficiencyand otherincentives

IP Rights incentives

VAT

— Since January 1st, 2008 transfer of exclusive rights on intellectual property as well as rights of use of intellectual property under a license agreement is VAT exempt with regard to the following types of IP rights:

- inventions, utility models, industrial designs;
- computer software;
- databases;
- topologies of integrated microcircuits;
- know-how.

IP Rights incentives

Corporate Income Tax

— Royalties paid for the use of IP rights are deductible provided that:

- The expenses are actual, economically justified and dully documented;
- Registered with Rospatent (if patent rights).

— Royalties paid for the use of IP rights to foreign companies are subject to a 20% withholding tax unless otherwise provided by international tax treaties entered into by Russian Federation

R&D

VAT

Starting from 1 January 2008, following R&Dare VAT exempt:

- creating new products & technologies ;
- improving manufactured products & technologies;

Provided that R&D works include the following activities:

- elaboration of the design of an engineering facility or a technical system;
- development of new technologies;
- creating industrialprototypes.

R&D

CorporateIncomeTax

R&D costs can be deducted after the accomplishment of such researches or works (or separate stages of these works) and signing the certificate of works completion of by the parties.

A)R&D works have positive results ➔R&D costs are deductible if their results are involved in manufacturing and/or selling goods starting from the first day of the month following the month of R&D works accomplishment. Such costs are deducted by equal portions during the course of 1 year.

A)R&D works have not positive results➔R& D costs are deductible by equal portions (in an amount of costs effectively borne) during the course of 1 year starting from the day of works accomplishment.

A)Special R&D costs deductibility regimes are established:

- For the companies registered and performing their business activities on the territory of SEZ (see infra)

-For the types of R&D works indicated in the list adopted by the Resolution of the Russian Government, R&D costs (including costs that have not had a positive results) are deductible during the tax period during which they are incurred in an amount of costs effectively bornex1,5 ratio.

Other Incentives

Energy Efficiency

— Investment Tax Credit

To company improving the energy efficiency of goods production (works, services) and/or investing in the creation of objects having the top class of energy efficiency, representing renewable sources of energy, producing thermal energy, electric energy and having a coefficient level of energy efficiency exceeding 57% and/or other objects of high energy efficiency according to a special list adopted by the Russian Government is entitled to an investment tax credit.

✓ Contract with the tax authority for a period of 1 to 5 years
✓ Up to 30% of the value of equipment acquired for the purpose of energy efficiency
✓interest rate between ½ and ¾ of refinancing rate of CBR

— Accelerated depreciation

Possibility to apply a coefficient doubling the depreciation rate in respect of assets defined with high energy efficiency according to a special list as well as sites classified in top energy efficiency classes.

— Partial compensation of interest on loans

On loans granted by Russian banks for the purpose of investing and implementing investment projects in the sphere of energy saving and increasing energy efficiency.

OtherIncentives

- Percentage of R&D costs spent for financing the Russian Fund for Technological Development as well as other funds intended for financing R&D was raised from 0,5 up to 1,5 % of the taxpayer's turnover;
- Special depreciation coefficient (maximum 3) to depreciate fixed assets used for scientific and technical activities;
- Exemption of financing received from Funds supporting scientific and/or technical activities;
- Regional investment incentives:reduction ofCIT by 4.5%, exemption of property tax, land tax, transport tax and possibility to grant "investment subsidy".
- Starting from July 1st, 2009 manufacturing equipments included in a list approved by the Government imported into the Russian Federation are VAT exempt.

Special Economic Zones

SEZ

General remarks

— SEZ is a part of the RF territory, determined by the Russian Government, where exists a special regime of performing business activities for:

- industrial &manufacturing (Republic of Tatarstan and Lipetsk) ;
- technical & innovation zones (Zelenograd, Saint-Petersburg, Dubna and Tomsk);
- tourist & recreation zones;
- port zones.

— Particular SEZ on the territories of Magadan and Kaliningrad regions.

SEZ

TaxBenefits

— Corporate Income Tax

- residents of industrial & manufacturing SEZ are entitled to apply a special depreciation ratio (2 as a maximum) with regard to their fixed assets;
- residents of any type of SEZ are entitled to deduct R&D actual costs in the period which they were incurred.

— Corporate property tax

- Exemption for 5 years.

— Land tax:

- Exemption for 5 years.

— VAT & customs duties

- Residents of SEZ importing to the territory of industrial & manufacturing SEZ and technical & innovation SEZ are exempted from VAT and customs duties on import and export of goods;
- Sale of goods between residents of SEZ is subject to 0% VAT rate.

Conclusion

FurtherDevelopment

According to the State program on “Technoparks”, it was intended to create several industrial parks in regions (Moscow, Novosibirsk, Nizhny-Novgorod, Kaluga, Tumen, Kemerov, Republics of Tatarstan and Mordovia and Saint-Petersburg) during the period 2006-2010 (postponed to 2014);

Technoparksaim at uniting business in the high tech sphere, including nano, bio, information & other technologies, scientific organizations, educational institutions and other enterprises business activities of which are closely connected with the above organizations or maintain their activities;

Specific feature of the program is a partly financing of infrastructure objects from the federal budget;

Advantages ofTechnoparks is to benefit from new infrastructure, reduce establishment costs and concentrate sector of activities.

Example: in accordance with the State program in 2007 OAO “Corporation of Development” was created in Kaluga region for the purpose of developing the infrastructure ofTechnoparksin Kaluga region and managing the financing of infrastructure projects.

Draft Law “OnTechnoparks” to regulate pending issues and provide the investors with incentives.

Thank you for your attention

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Modernisation of the Russian Economy: Input of European and Russian Businesses

Session 2
Financing of Innovating Projects

November 24th, 2009
INSOR, Moscow

EBRD Support for Innovation

AEB - 24 November
Moscow

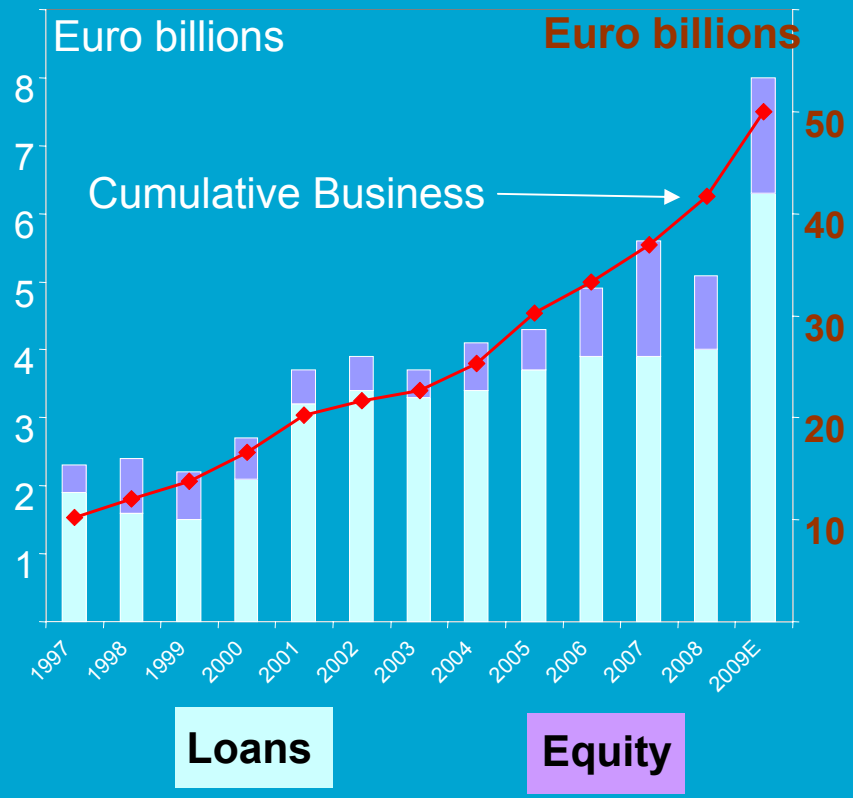
Eric Rasmussen

Director Corporate Sector

Russia Business Group

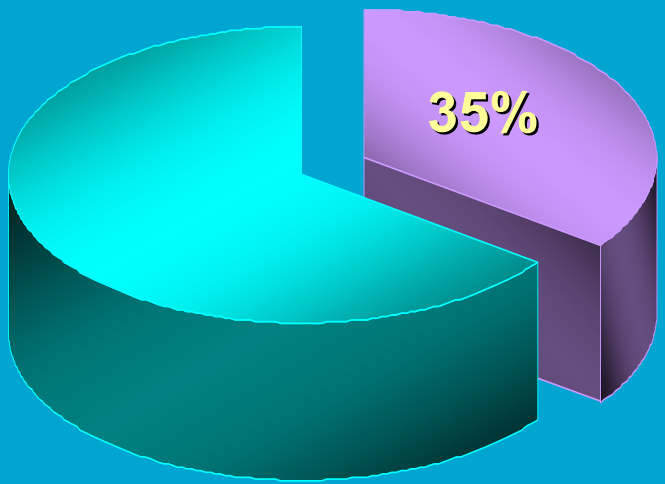
EBRD's cumulative investments of EUR 50 billion. About 25% in Russia.

- Promote market efficiency by investing mainly in the private sector
- Mobilise foreign direct investment
- To support municipal services to improve people's lives
- To encourage environmentally sound and sustainable development
- 2,600 projects since 1991
- 1/3 of all new business in Russia
- Largest equity fund program in the EBRD countries of operation



Direct Financing: Basic Guidelines

Minimum
EBRD financing: Euro 7mn



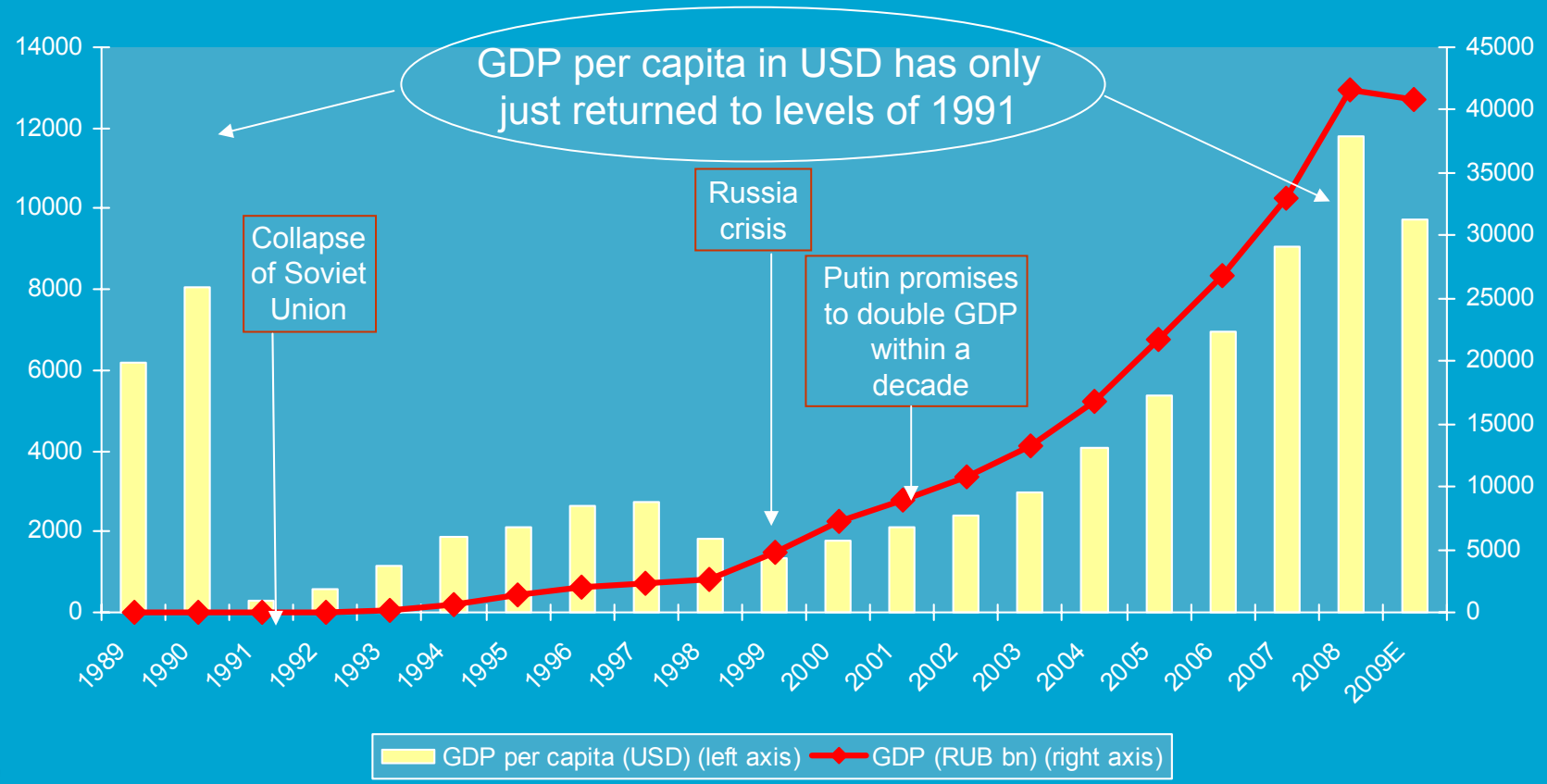
Minimum Project: Euro 20mn

- Significant equity contribution from the Sponsor ensures a prudent capital structure
- Appropriate return on investments - a fair balance of risk / reward
- EBRD money usually not to exceed 35% of capitalisation of company (or 50% in case of syndication)

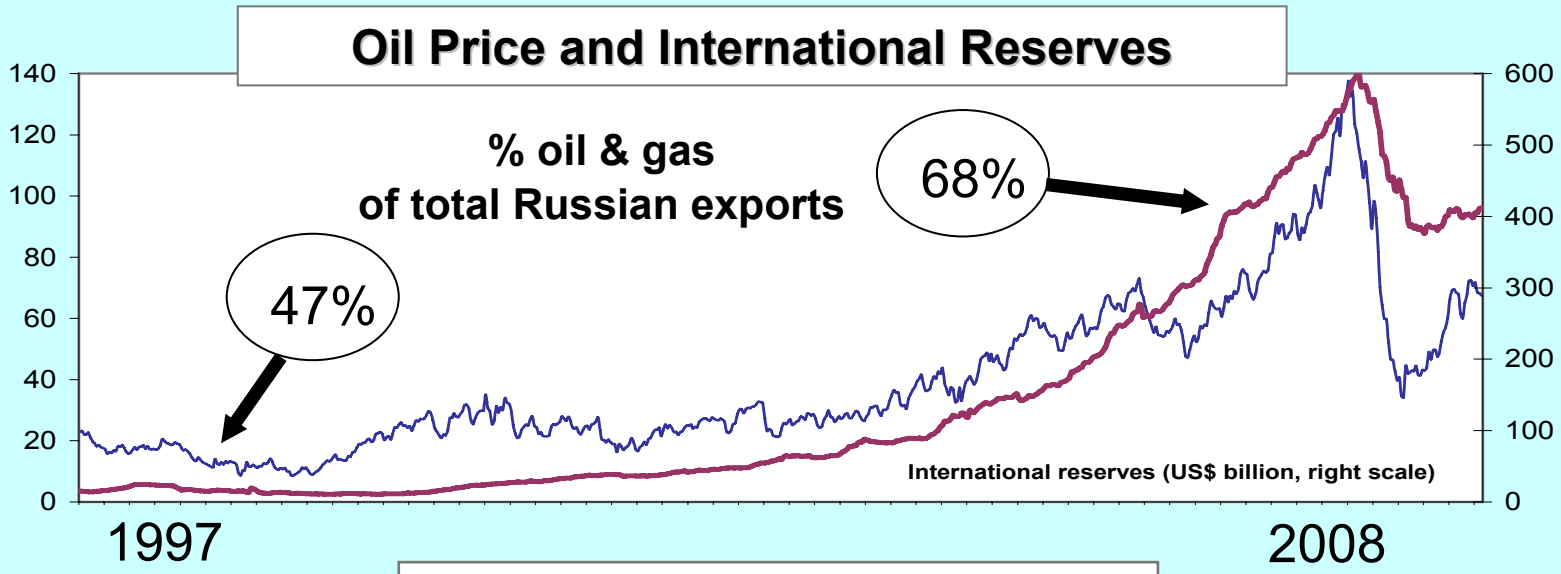
EBRD - Support For Innovation

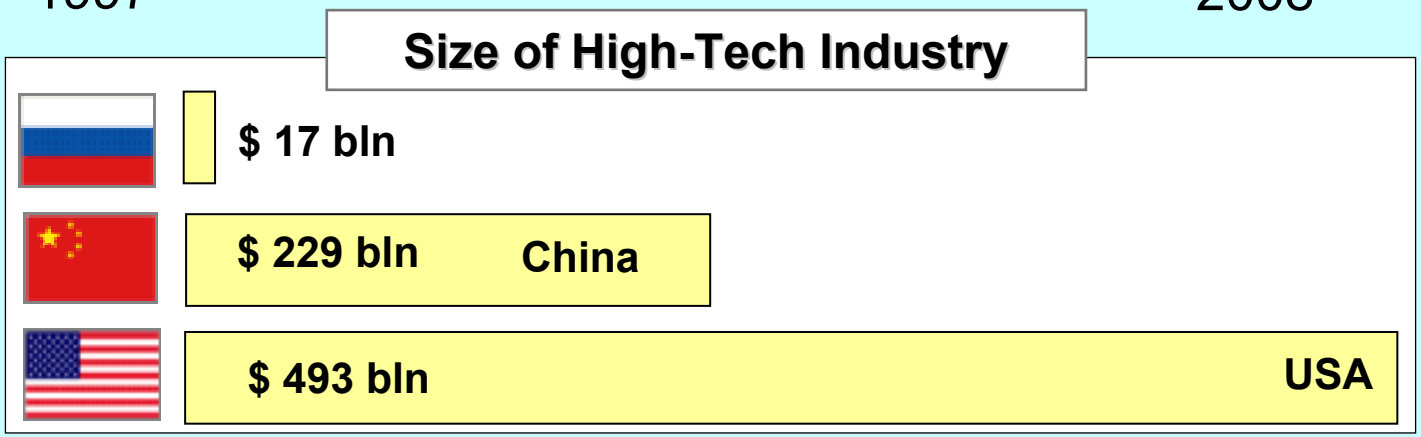
- AAA rated and internationally recognised IFI with long-term view
- Willing to share risks, including political risks
- Experience gained in problem resolution
- Extensive knowledge of local business environment
- Good working relations with authorities
- Good corporate governance (incl. protection of minority interests)
- High quality due diligence and opportunity studies
- Limited recourse long-term equity and loans (2,600 projects)
- Largest private equity fund program in the region (1,000 clients)

Russia has still lots of potential…

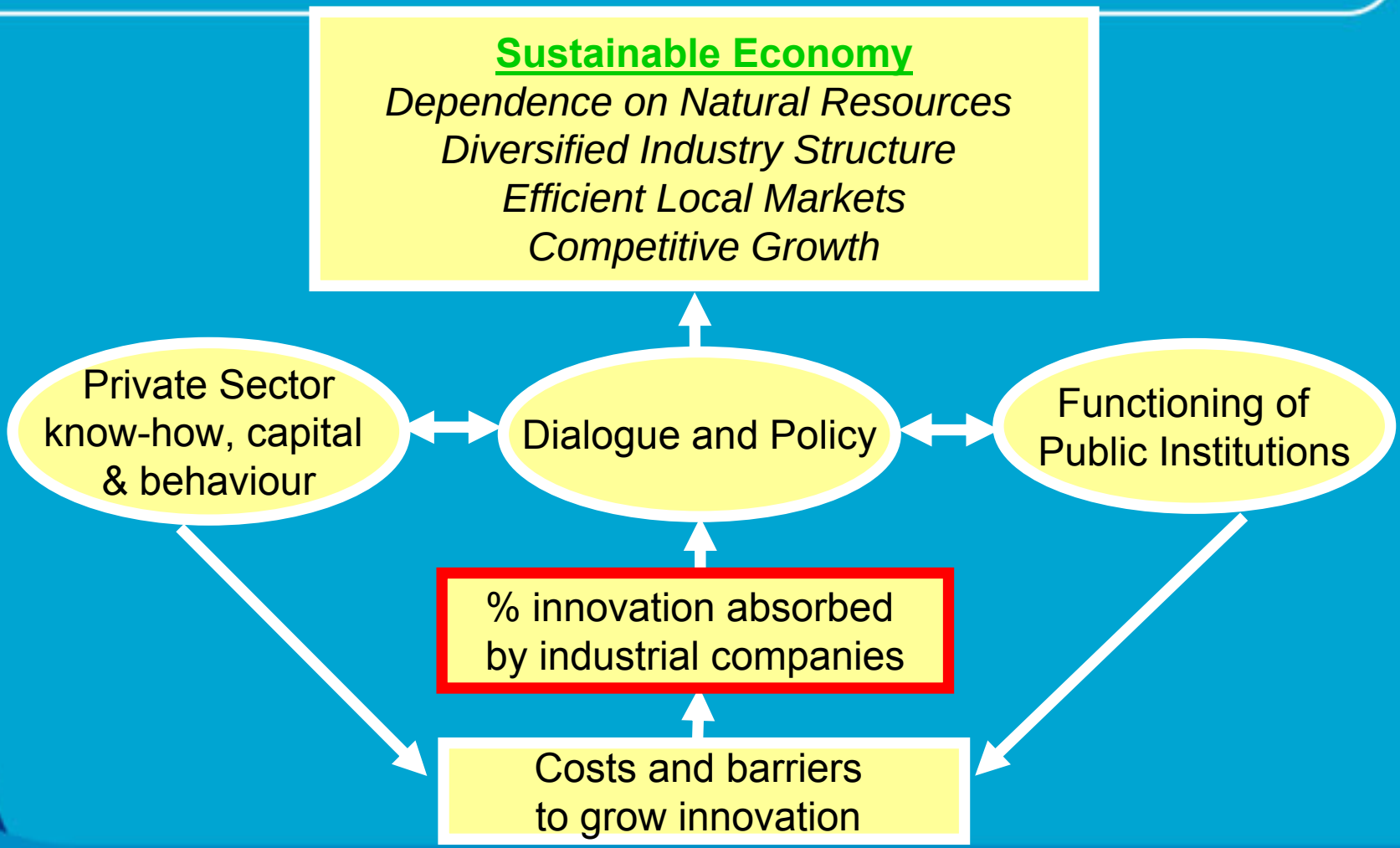


… but the economy is more than ever dependent on oil.



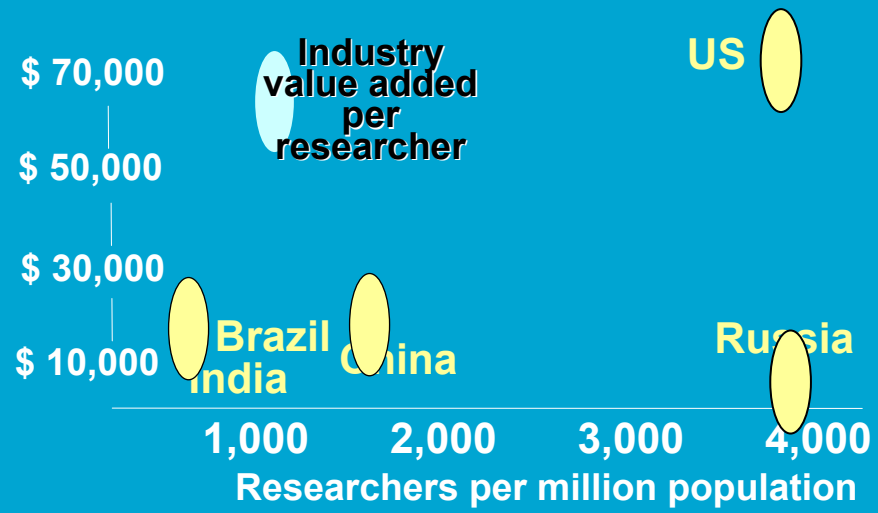


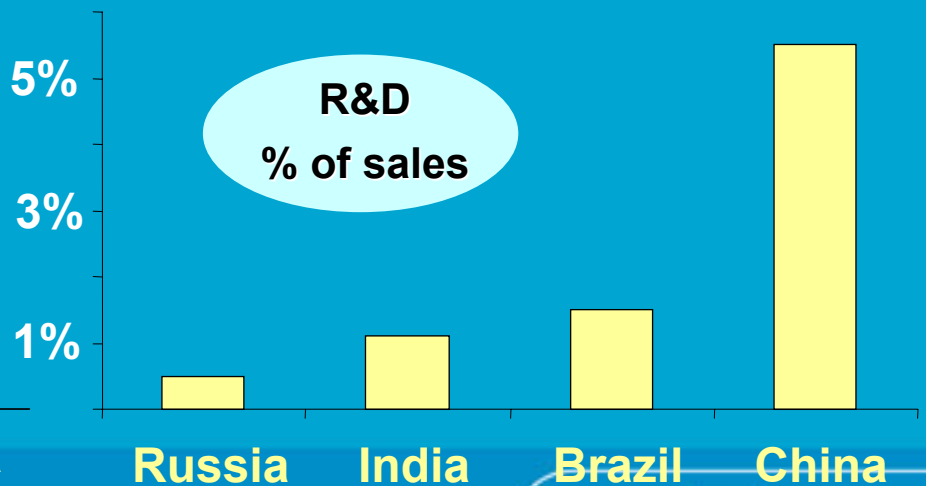
Sustainable economic growth depends on the climate for industries to absorb innovation



Private Sector: Transformation of Russian companies necessitate a higher pace of absorbing innovation.

Innovation in Russian Firms	
44%	No innovation (passive)
7%	In-house improvements
19%	New technology for Russia
3%	New technology for the World
27%	Adapting imported innovation





Private Sector: The transformation of Russian companies necessitate new operational and finance strategies.

	Re-think (1H 2009)	Adjust (2H 2009 - 2010)	Transform (2010-2015)
Operations	Viability Assessment	Cut to size	Innovate, imitate and refocus for recovery and competitiveness
Finance	Stand still	Rescheduling Financial investor	Restructuring Industrial alliances Tailored finance mix

Barriers in Russia's Innovation Climate

- **Few sources of finance and guidance**

  USA: Thousands of venture funds, angels, seed investors, high R&D in private sector.

  Russia: Over 50% of R&D is financed by the State.

- **Undeveloped high-tech infrastructure**

  USA: Example of success (Silicon Valley)

  Russia: Techno parks are good, but yet untested.

- **Complicated registration of high-tech start-ups**

  USA: 1 day

  Russia: Several weeks to 8 months (red tape).

- **Restrictive tax policies**

  USA: Tax preferences for high-tech SMEs.

  Russia: SME are often unable to generate profits without complicated tax optimization.

EBRD Innovation Opportunity Study: What & Why?

Rationale

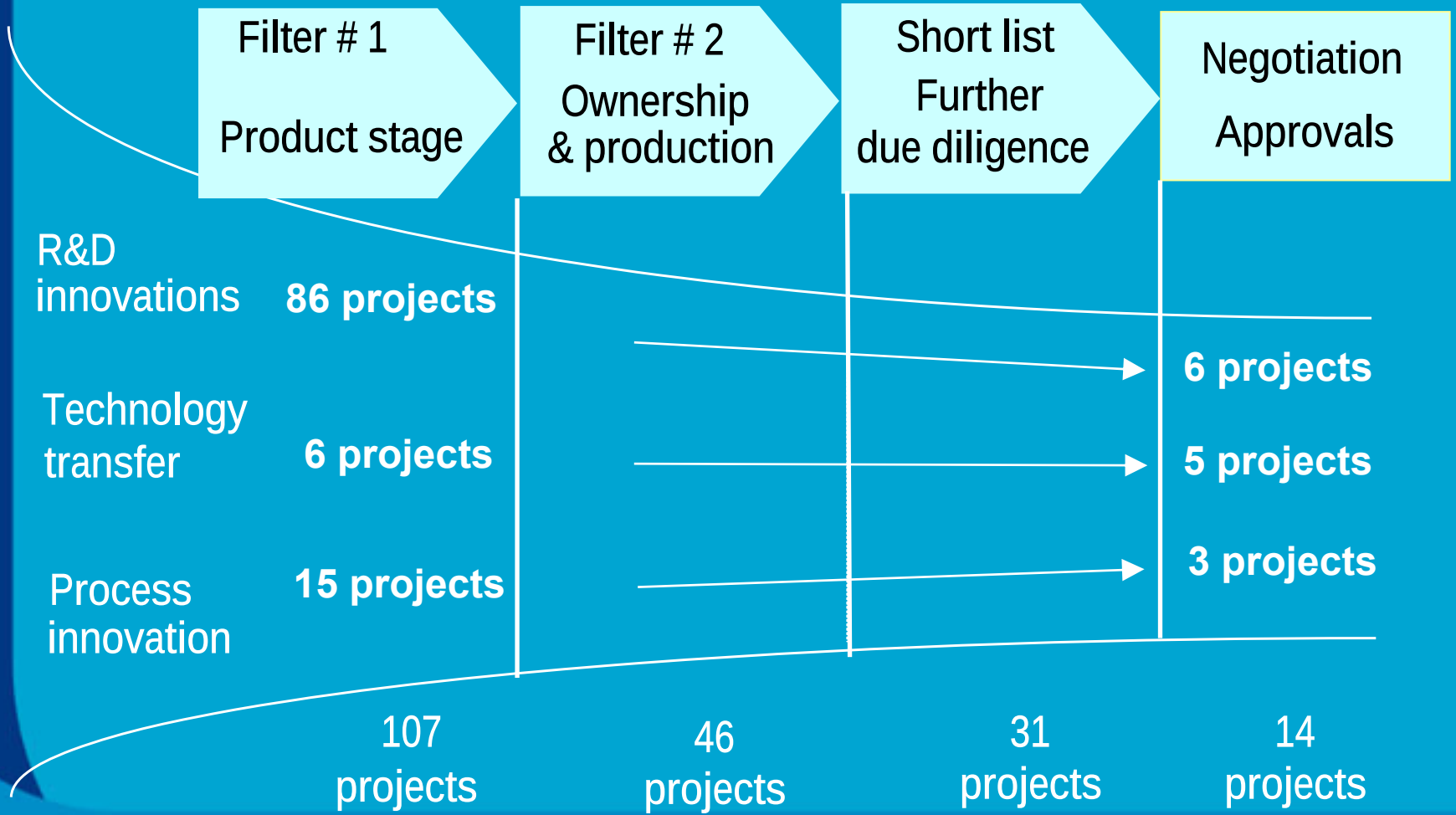
EBRD has launched a study to help scan for viable projects, which could tap Russia's scientific potential and help the industrial sector absorb innovation. Rosnano is a partner in the study.

Russia has potential from its science base and education system in science and technology. However, the financial crisis imposes major constraint on the funding for innovative technology projects.

Focus

The study involves visits to techno parks and various business incubators in order to identify projects led private sponsors.
The focus is on commercialisation of high-tech innovative projects as well as demonstration cases in energy efficiency, health and safety.

EBRD Innovation Opportunity Study: **Since July the study screened 107 opportunities and 14 projects are currently short-listed for commercial negotiations and internal approval.**



Petrovax Case Story

Petrovax is a small Russian pharmaceutical company focusing on development and commercialization of vaccines and drugs in the field of immunology. The firm had in 2003 **one key product** (polyoxidonium) an immune stimulant and an adjuvant for the flu vaccine. Petrovax **turnover in 2003** was EUR 5 millions.

Strengths

- Intellectual property based on polyoxidonium molecule
- Highly knowledgeable and ambitious scientific team
- Key niche products

Weaknesses

- Limited financial resources for R&D
- Limited production facilities and capabilities
- Low brand awareness

Petrovax Case Story: Vaccine Project

"Vaccine Project": Construction of a state-of-the-art manufacturing facility for production of flu vaccine in syringes. And the development of a new flu vaccine in a partnership with a leading pharma player.

Alliance: Solvay Pharma (today owned by Abbott)

Finance: EBRD EUR 25 million loan to SVP guaranteed by Solvay Pharma and Petrovax

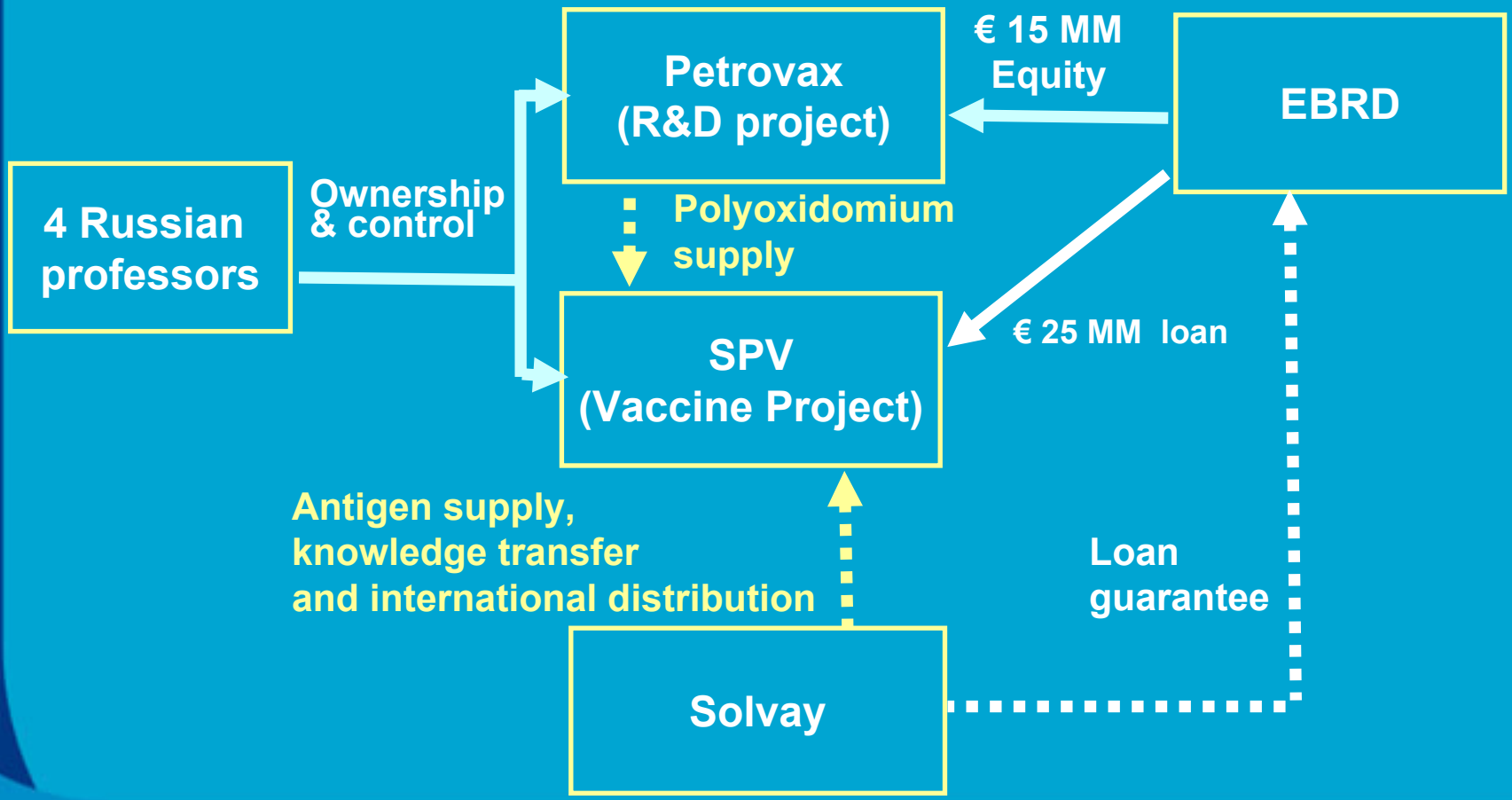
Petrovax Case Story: R&D Project

"R&D Project": Construction of a 2nd production line (liquid and solid forms). Clinical trials, registration and commercialization of 2 new products. Also improvement in the organizational structure and corporate governance.

Alliance: EBRD involvement at Board

Finance: EBRD EUR 15 million equity Petrovax

Petrovax Case Story: Project Structure



Note: details are simplified for case study

Petrovax Case Story: Status

Industry Position: Petrovax is today a leading Russian pharmaceutical player with GMP facilities and a strong portfolio of branded products and products at various stages of development. Petrovax has several IP and production collaborations with the World's leading pharma companies.

Sales: Approximately **20x** increase in sales and profitability over the last 5 years and growing.

Corporate Governance and Jobs: Many new jobs for a new generation of researchers. Implementation of IFRS, modern MIS and corporate governance practices.

Thank you for your attention!

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EAST CAPITAL
PRIVATE EQUITY

Financing of Innovating Projects: Alternative Funding Sources

Jyrki

Talvitie
Chief Representative at East Capital
Moscow

EAST CAPITAL

East Capital in brief

- Leading asset manager dedicated to Eastern Europe
- 4.4 billion USD in public and private equity
- 150 employees
- Offices in Stockholm, Paris, Moscow, Hong Kong, Tallinn, Oslo and Vienna
- Diversified client base across both geography and client segment
- 12 year track record
- Independently owned and managed

Country breakdown of our investments

Note: as of 30 September 2009

Typical Financing Structures

In mature markets	In Russia
▪ Business Angels	▪ State
▪ Incubators	▪ Venture Capital (first signs)
▪ Venture Capital	▪ Dedicated Private Equity Funds
▪ Private Equity	▪ International Financial Institutions
▪ Banks	▪ Banks
▪ Specialised lenders	▪ Capital markets:
▪ Capital markets	- Bonds
- Bonds	- Equity
- Equity	

Issues of Financing in Russia

- Risk perception
- Opportunity cost
- Corporate Governance
- Strategic sectors
- Legal framework:

- Property rights

- Intellectual rights

EAST CAPITAL

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ASSOCIATION OF EUROPEAN BUSINESSES
IN THE RUSSIAN FEDERATION

Modernisation of the Russian Economy: Input of European and Russian Businesses

Session 2
Financing of Innovating Projects

November 24th, 2009
INSOR, Moscow

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Session 3
Energy Efficiency as the Transition Way to the Innovative Economy

November 24th, 2009
INSOR, Moscow

ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR

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Russia and CIS
ALSTOM / Global Power Sales

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SUMMARY:

- Institutional approach
- Statistical approach
- Approaches in the power generation business
- Approaches in the transport business (railway, urban rail transport)
- Environmental approach

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ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR: Institutional approach

- The President Medvedev has stated for several times that "*the energy efficiency is a strategic theme for the country's development*". He called on to implement new energy saving technologies with an "*iron fist*".
- 40%: figure of the energy efficiency improvement by 2020 ("Development strategy of Russia by 2020)
- The law "On the energy saving and energy efficiency improvement" was approved by the Council of Federation last week (18th November) → Russian companies' demand for services in the energy saving area should increase sevenfold (*RSPP estimation*).

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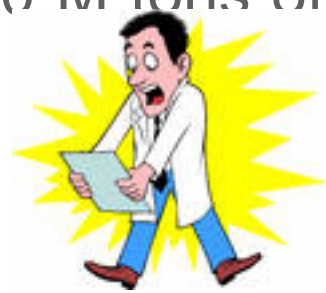
ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR: Statistical approach

- Annual energy consumption in Russia (2007): 990 M tons of coal equivalent (much more than in Europe and the USA). If Russian industry uses the same equipment and technologies as Europe, annual energy consumption in Russia would decrease to 650 M tons of c.e. ⟶



35%: annual energy losses

- Industrial sector is the most important energy consumer in Russia: 48% of energy and 26,4% of fuel
- The most important losses are registered in the processing industry: 33%. Potential of energy saving in this sector: 14%

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ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:

WHY?

Four key factors:

- Lack of **incentives** for energy saving: cheap resources (eg gas price); cross subsidies; weak regulatory Framework (law on Energy Efficiency)
- Lack of **information** within business community: no idea about the real financial "capacity" of energy saving technologies ;
- Lack of **financing** from banks and government: too expensive credits, so far no institutional financial support to companies implementing energy saving technologies;
- Lack of **harmony** in the legislation**:** no energy related "connections" between different legislation areas (building, public purchases etc.)

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WHAT TO DO?

- **Better use of resources** (fuel) by increasing **energy efficient** equipment;
- **More renewables ?**
  - Current accessible renewable resources in Russia = about 24 bn tons of c.f.
  - Only 1% of electricity was generated in Russia in 2008 with renewable resources (without taking into account HPPs with capacity > 25MW) and only 3% of heat.

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ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Approaches in the power generation business

- **New build**:
  - combined cycle for gas plants (Efficiency > 55% vs current 35% in Russian gas fired IB) ; a combined cycle plant uses **~30% less fuel per kWh** produced
  - ultra supercritical technologies for steam (coal) plants (Efficiency up to 44-47% from current 35%)

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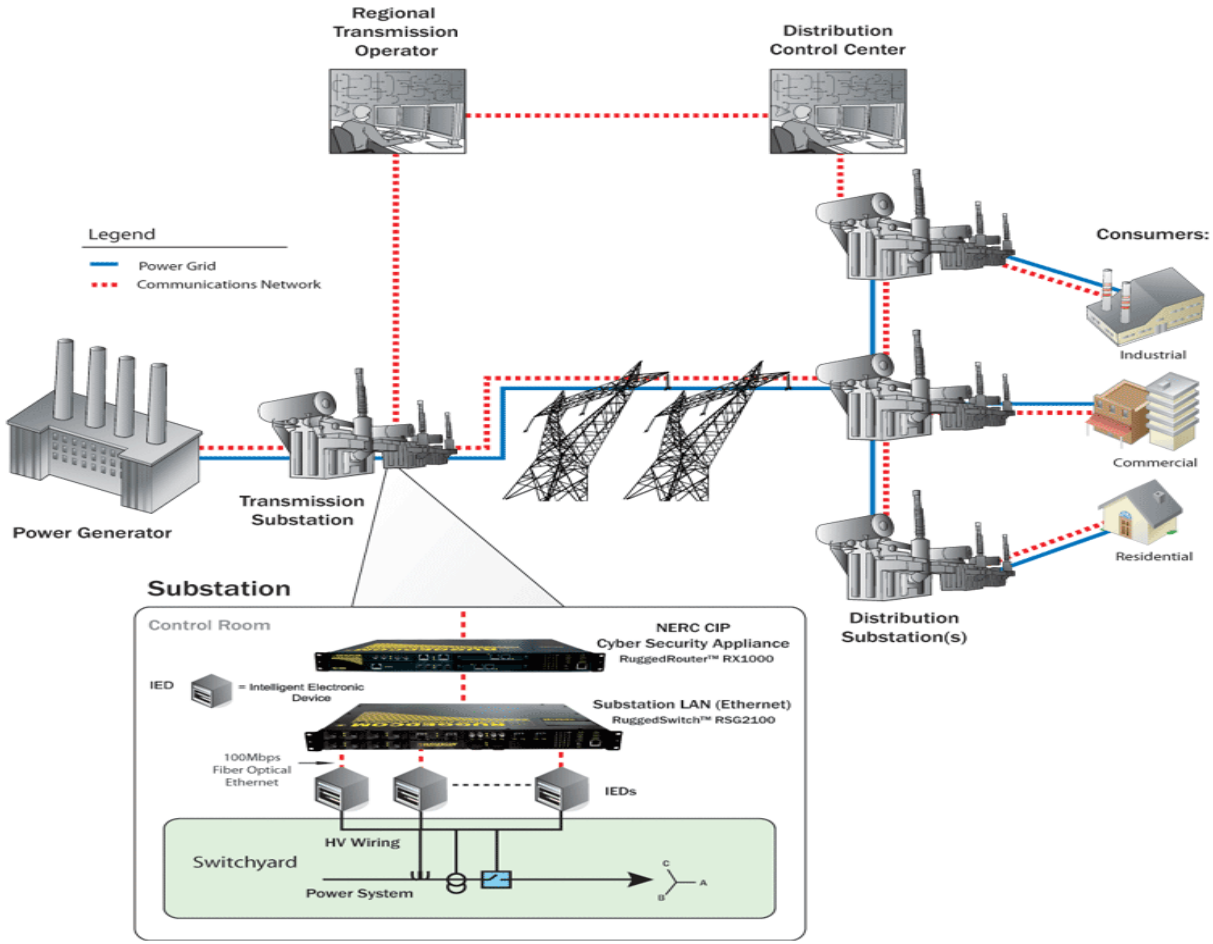
ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Approaches in the power generation business

- Use of the "**smart grid**":



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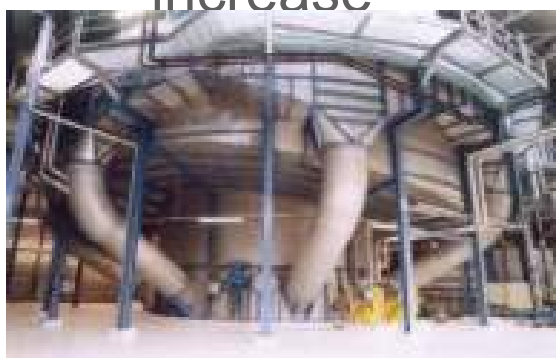
ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Approaches in the power generation business

- **Modernization of existing plants:**
  - Gas fueled : large-scale repowering of steam turbine plants
  - Steam plants : boiler and Steam turbine retrofits (partial modernization) aimed at efficiency increase



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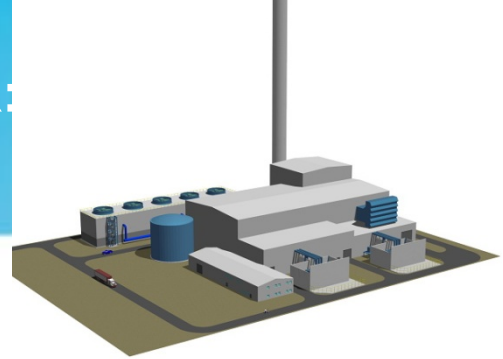
ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Approaches in the power generation business



Example of ALSTOM: TPP-26

Full EPC in consortium with EM Alliance

- **Alstom Power Train**: 1-KA26-1, GT26 gas turbine with generator, steam turbine with generator Multishaft arrangement for higher operation flexibility
- HRSG made in Russia by partner to Alstom design
- **Ouput:** 420 MWe
- **El. Efficiency:** 59 % (highest efficiency at Russian combined-cycle power plant)
- **District Heating:** 2 DH heat exchangers (heated by IP exhaust gas from steam turbine)
- **Output:** 265 MWt (in full DH mode)
- **Overall Efficiency:** 89 % (combined generation and district heating)
- **Operating modes:**
- Unit can work either in fully condensing mode or cogeneration (power and heat) mode with very good flexibility at part loads;
- This “block 8” of TPP-26 power plant will boost the total installed capacity from 1,400 to 1,820 MWe.
- A plant with low emissions, meeting the most stringent applicable environmental regulations;
- The operational efficiency of the new combined-cycle will reduce the consumption of natural gas by 30 % in comparison with the average Russian power plant.
- Based on 2011 expected gas prices, this fact would result in a reduction of gas consumption by 326 Mio m3 natural gas in the first year of operation, allowing savings of RUB 1,381 Mio (US$ 55 Mio).

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ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Approaches in the transport business (railway, urban rail transport)

- to improve effectiveness of traction systems;
- to lighten trains in order to reduce their energy consumption;
- to recover power during

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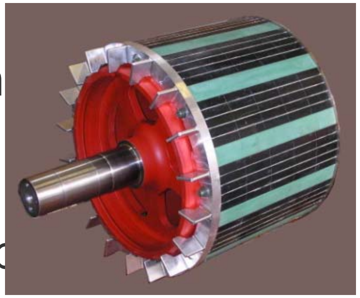
ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR: Approaches in the transport business (railway, urban rail transport)

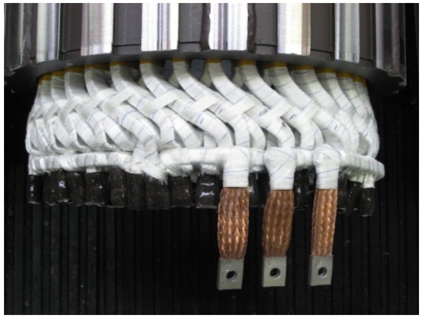
Examples of ALSTOM:

Permanent Magnet Motor:

- Provides more efficient traction than an asynch electric motor
- Reduced energy consumption: 97% output
- New Citadis are equipped with PMM (ex: Istanb

Permanent magnet rotor motor →





Permanent magnet motor stator

Electricity production during the braking phases:

- All our new trains are equipped with regenerative braking and restitution of electricity to the catenary
- Power feedback can reach 8 MW

Weight reduction:

- Materials, traction systems, articulated architecture
- 15% reduction in energy consumption

Inverter tramway substations: the HESOP project:

- Re-inject the braking generative power of the trains into the power grid even if there is no other train on the line
- Under development for 750v DC

Ecodriving:

TICA (Trainborne Improved Consumption Assistant) **programme:**

- Real time onboard energy management
- Driving assistance for saving

ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Environmental approach

- Modernization and consequent intensification of the economy leads to higher load to the environment. Thus no breakthrough in economy possible without proper assessment and addressing of environment impact.
  - **positive environmental impact** in lowering CO2 and others pollutants (Sox, NOx, particles, etc)

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ENERGY EFFICIENCY IN THE INDUSTRIAL SECTOR:
Environmental approach

Example of ALSTOM:

- Alstom possesses the full range of air quality control systems and pioneers CO2 capture technologies for the future. We can assist in making studies and expertizing in environmental and CO2 compliance for new industrial and power plants to let from the conceptual design and layouting take into account future trends and requirements for the industries.

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sense and simplicity

Energy Efficient Lighting

- A Triple Win for People, Environment and Economy -

Joost Leeflang

CEO Philips Russia, Belarus, Ukraine, Kazakhstan

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Global economic crisis

Climate crisis

Energy crisis

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11month pay-back: Steel Factory

➢ 50% energy saving

Scope

- 4000 luminaries

Electricity saving

- Energy saving: 55%
- Released electricity: 2,5MW
  = consumption of 6.500 households

Financial impact

- Savings: 30 MLN RUB p.a.
- Pay-back period: 11 months

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9 month pay-back: Metal plant

➢ 50% energy saving

Scope

- 84 luminaries

Electricity saving

- Energy saving: 54%
- Released electricity: 50,4kW

Financial impact

- Savings: 700k RUB p.a.
- Pay-back period: 9 months

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2,6 years pay-back: Public street lighting

➢ 50% energy saving

Scope

- 755 luminaries
- Lighting controls

Electricity saving

- Energy saving: 51%
- Released electricity: 113kW

Financial impact

- Savings: 1,5MLN RUB p.a.
- Pay-back period: 2,6 years

Savings in all applications

asimpleswitch.com

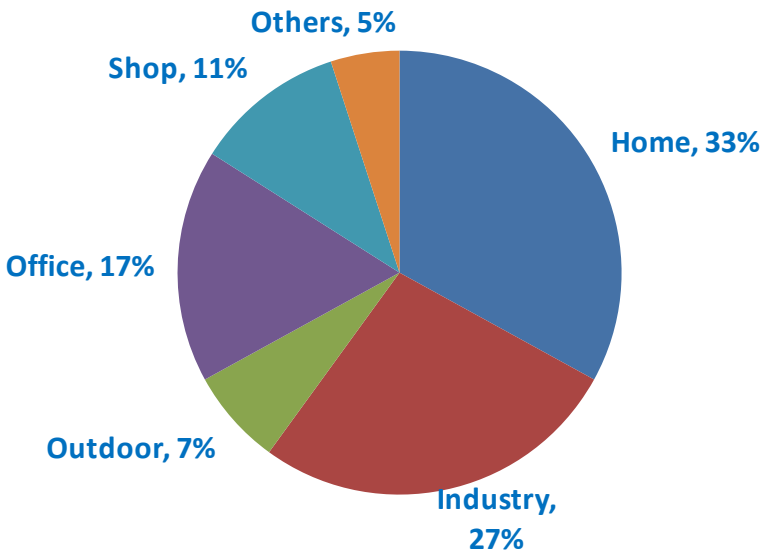
At home

Outdoor

Offices

Shops

Electricity consumption in Lighting per segment



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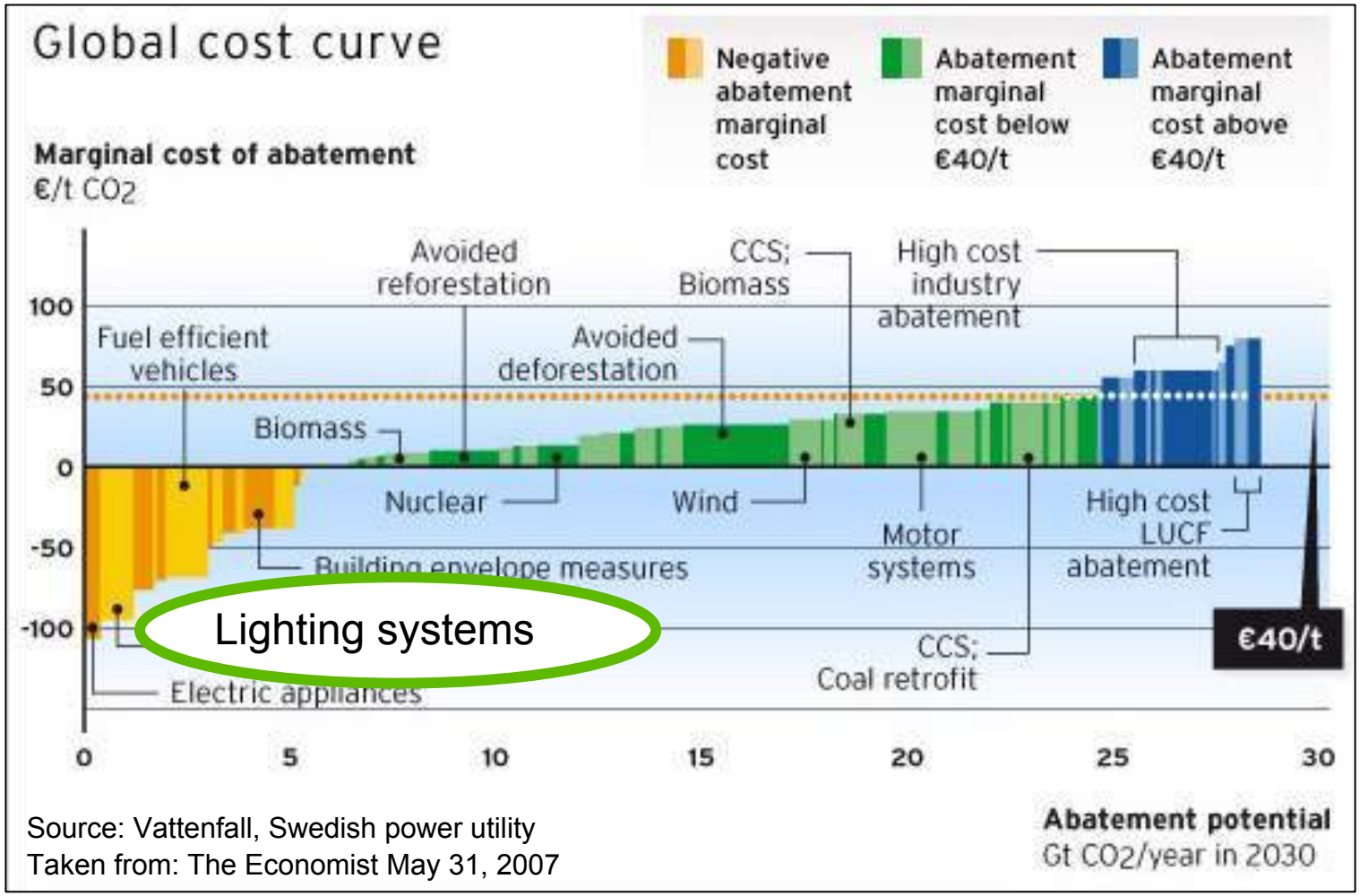
Lighting is most economic in energy & CO_2 saving



Source: Vattenfall, Swedish power utility
Taken from: The Economist May 31, 2007

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Energy efficient lighting increases comfort

Scope

- Street lighting

Electricity saving

- Energy saving: 50%

Light quality

- Lightlevel: +100%

Safety

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Energy efficient lighting: a triple win

- **End-users:** lower costs, better quality light
- **Environment:** lower energy usage, lower emissions
- **Economy:** lower costs, greater competitiveness, green jobs

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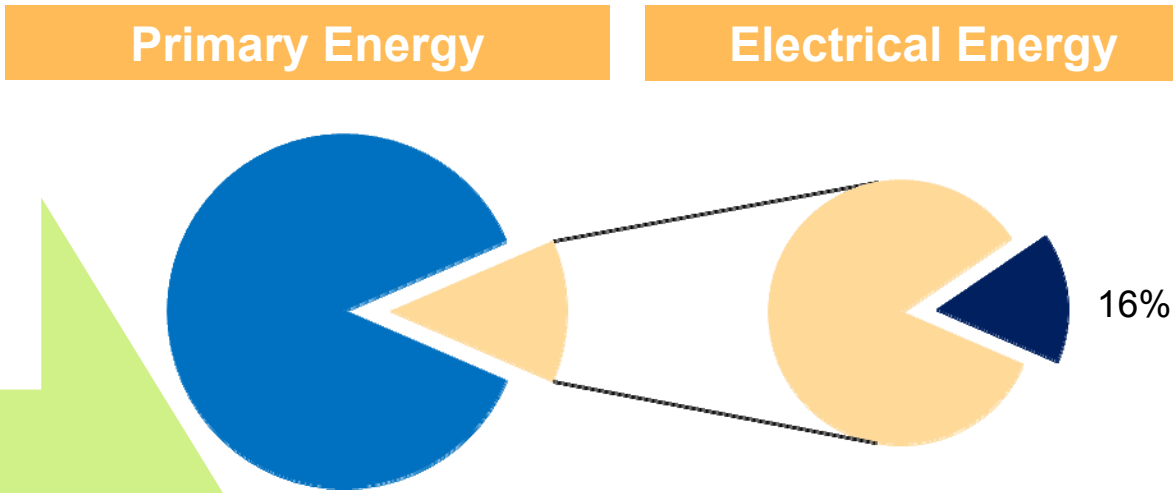
The huge impact of Lighting

- Lighting consumes 16% of all electricity within Russia
- Lighting consumes 19% of all electricity in the world (source IEA)



Key issues

- Rising energy prices
- Global climate change
- Security of energy supply
- Economic growth

Value proposition = Energy efficient lighting

Savings of 40% are possible

Today

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It should go faster ….

Current lighting market situation

- Up to **75%** of all lighting currently installed is old less energy efficient
- New energy efficient **solutions exist** for all segments
- Tomorrow we will have even more solutions (LEDs)

But:

- The current market **renovation** rates are too slow ! (e.g. Street lighting 3%, Office Lighting 7% etc)

Huge potential for energy saving

Area of lighting	Energy saving	CO_2 & $ savings per light-point per year	
Road lighting	57%	132 kg CO_2	$ 33
Shop Lighting	80%	140 kg CO_2	$ 36
Office & Industrial Lighting	61%	93 kg CO_2	$ 25
Home Lighting	80%	41 kg CO_2	$ 10
LEDs	80%	41 kg CO_2	$ 10

Potential savings

	Russia	*Global*
Electricity cost/yr (Bln €)	up to 5	120
CO_2 emissions/yr (Mio tons)	up to 32	630
Power plants (at 2TWh/yr)	up to 30	600

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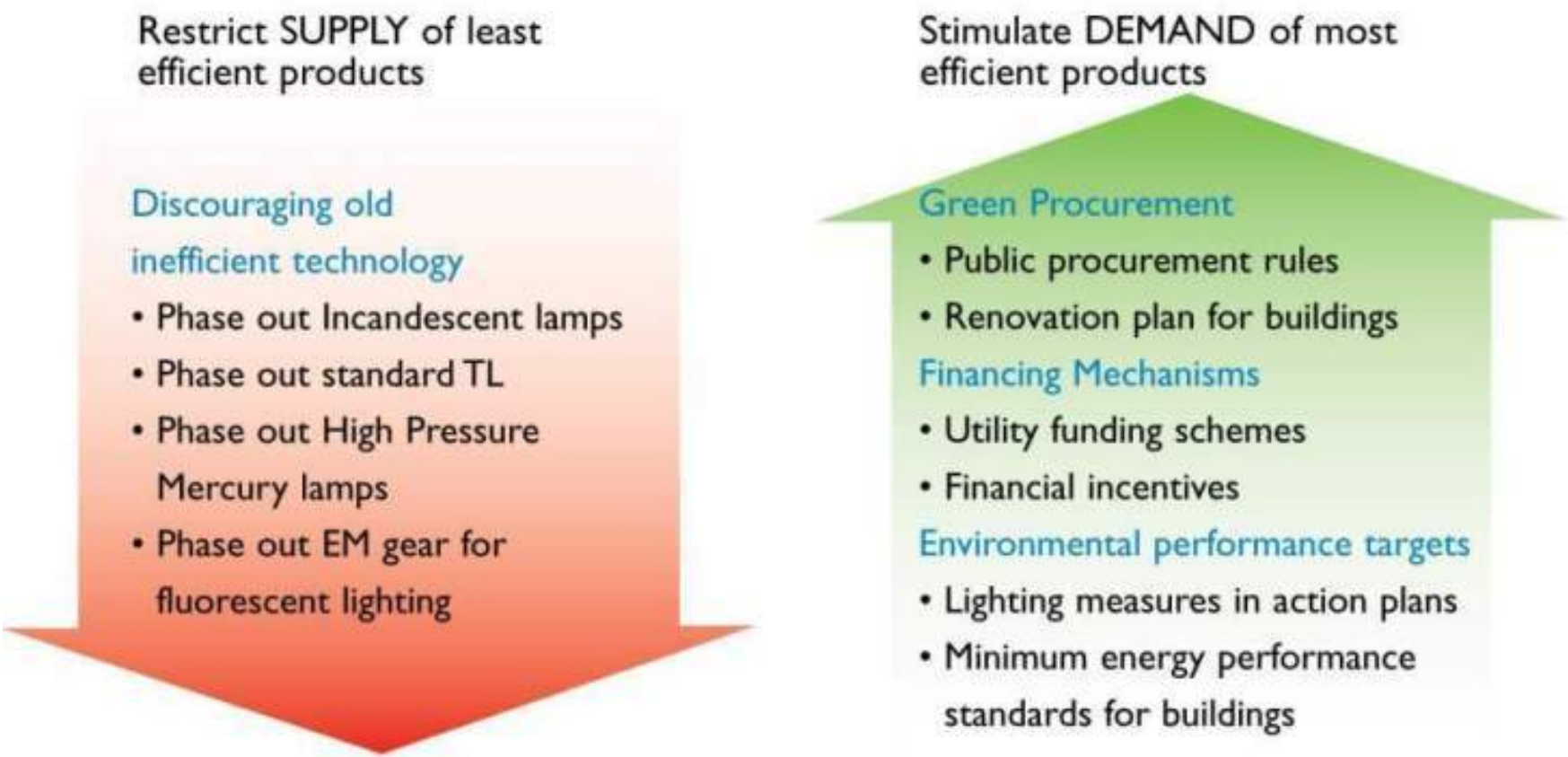
The new law on energy efficiency tackles some, but not all possible measurements



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Philips offer to our partners

Energy Audit → **Saving potential** → **Renovation Proposal** → **Implementation**

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Let's get started

- Lighting can play a big role in energy efficiency
- We invite everyone to do more: we have the technologies, people and products
- Legislation is in place, or on its way
- What we are waiting for?

The time to act is now


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The benefits of innovative energy efficient Lighting

Our customers benefit from …

- Up to 80% less costs through reduced energy and maintenance bill
- Attractive investments with pay-pack periods from 1-4 years
- Higher turnover by attracting more customers and more alert and active staff
- An ecological image by using state-of-the art energy saving solutions
- More safety for the staff and the production process

Because our technology offers …

- Higher energy efficiency
- Longer life time and higher reliability
- Better light quality
- Less hazardous substances

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Industry lighting

>50% energy saving

Features/Enterprise	**Novolipetsky metals plant**	**Severstal (project for 2010)***
Place	Machine shop	Cold-rolled mill production
Types of luminaires	HPL 1000 W to Cabana HPI 400 W	HPL 1000 W to Cabana HPI 400 W
Number of luminaires, pieces	84	4200
Decrease of energy consumption per year, kWh	from 753.270 up to 345.576	from 28.234.960 up to 13.140.116
Decrease of energy consumption per year, rub	from 1,4 ml.rub up to 673 thousand rub	59 ml rub up to 27 mlnrub
Released capacity of installation, kW	50,4 kW	2,5 mega W
Energy-saving	54%	55%
Payback period	8,7 months	11 months
Decrease of expenses for electricity in case of replacement of all lamps, ml. rub	from 13 up to 5	from 210up to 96

*estimated data in accordance with this project

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Outdoor lighting

Projects implemented in 2009

➢ 50% energy saving

Features/City	**Krasnoyarsk** *	**Makhachkala** *
Types of luminaires	Selenium with Chronosense	Selenium with Chronosense
Number of luminaires, pieces	755	44
Decrease of energy consumption per year, kWh	from 1.230.000 up to 599.000	from 40.700 up to 20.350
Decrease of energy consumption per year, rub	from 2,9 ml. rub. up to 1,4 ml.rub.	from 128 thousand rub up to 65 thousand rub
Released capacity of installation, kW	113 kW	4,4 kW
Energy-saving, %	51%	50%
Payback period	2,6 years	4,5 years
Decrease of city expenses for electricity in case of replacement of all luminaires, ml. rub	from 120 to 55	from 43 to 18

*Krasnoyarsk - biggest city of East Siberia with population of 950 000 people

*Makhachkala – capital of Dagestan republic with population of 460 000 people

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