

# ***Влияние Парижской конференции по климату на российскую и международную нефтегазовую промышленность: приглашение к дискуссии***

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# Possible COP-21 Consequences for Russian & International Oil & Gas: Invitation to the Debate

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Presentation at The IX International scientific conference

“ENERGETIKA XXI: economy, policy, ecology”:

“The Role for Russian Resources under Changed Energy Prices and De-carbonization”,  
10 – 11 November 2016, Courtyard Marriott St. Petersburg Pushkin Hotel

# What is COP-21 & what it's future role?

- COP-21 (21<sup>st</sup> Conference of Parties) – the Paris agreement within UN Framework Convention on Climate Change, was prepared within climate conference in Paris,
- regulates the measures on diminishing CO2 emissions post-2020,
- adopted by consensus 12 December 2015, signed 22 April 2016
  - 175 signatory states (UN = 193 states), account for 95% of emissions
- came into force 04 November 2016
  - on 30<sup>th</sup> day after critical EU ratification 04.10.2016 when COP-21 has passed the needed threshold - more than 55 states representing more than 55% of global emissions joined the Agreement (incl. USA & China - 40% of global emissions)
- After COP-21 is in force, I foresee increasing pressure on Russia to “join the club” ASAP “not to be an outcast in the new world”
- **BUT:** From my (and not only my) view: **COP-21 is major factor of uncertainty in international energy/oil & gas, possibly creating new paradigm of international energy development => what are prospective challenges/risks?**

# Past/Current Paradigm of Energy Development

- **PAST/CURRENT:** possible (*though in a rather distant future if any at all*) **supply side** limitations due to dominant non-renewable character of energy resource base; fundamentals:
  - “Hubbert’s curve” (1949) => bell-type production curve for non-renewable resource extraction => two schools of thought:
    - Geologists: “peak oil” theory (physical limits to energy production growth),
    - Economists: at least not within 2 global invest cycles (current & next ones)
  - “Hotelling rule” (1931) => future value of fossil fuel in-situ increases (by the value of the current interest rate within the time-frame),
  - Both concepts works for increasing future cost & value of in-situ non-renewable energy resource within time-frame, at least since early 1970-ies - after “Chevalier’s breakpoint” (1972):
    - “Evolutionary” STP just slows-down E&P cost increase of non-renewable energies influenced by “natural” factor which overbalance STP influence
    - “Revolutionary” STP can overbalance negative influence of “natural” factor and thus can lead to temporary decline in E&P costs of non-renewable energies
  - Both theories did not consider possible demand-side limitations
    - Yamani (1972): ““The Stone Age did not end for lack of stone, and the Oil Age will end long before the world runs out of oil” (respond to “Limits to Growth” Meadows et al)

# COP-21 & New Limits to Growth

- **IEA (2012)/IPCC (2014):** cumulative future CO<sub>2</sub> emissions from *current* PRR HC volumes are **THREE (IEA) to THREE-FOUR (IPCC) TIMES HIGHER** than the upper limits of such emissions which are agreed upon in Paris bearing in mind sustainable global development (within 2°C limit):
  - IEA: 2/3 of such potential emissions will come from coal, 22% from oil and products, and 15% from gas.
- **OR:** to limit global warming **by 2°C** without large-scale implementation of carbon capture & storage (CCS) = not be able to consume (\*) **MORE THAN ONE THIRD (IEA) (IPCC: 1/4-1/3)** of global proven recoverable reserves (PRR) of hydrocarbons (HC) up to 2050

(\*) through technological chains from production to end-use of each fossil fuel (coal, petroleum products, gas) in each energy/non-energy use of energy resources

# COP-21 & New Paradigm of Energy Development

- **COP-21 might radically change the paradigm of future energy development !!!**
- **FUTURE (?)**: possible limitations on the **demand side** of global energy induced by the climatic-based restrictions on emissions (COP-21) - **???**:
  - not all today's CPRR might be demanded by global economy ("unburnable carbon")
  - decreasing (NOT increasing) value of oil in place due to its staying potentially unclaimed (an opposite to Hotelling rule)
  - stimuli for quicker extraction and utilization of CPRR HC
  - this will accelerate expectations of the "cheap oil" era ("cheap" means not because of decreasing production costs but because of diminishing price that the society will be ready to pay for it)
  - future possible oversupply artificially created by climate change agenda **???**

# Mark Carney, G-20 FSB Chair, at Lloyd's First City Dinner of London

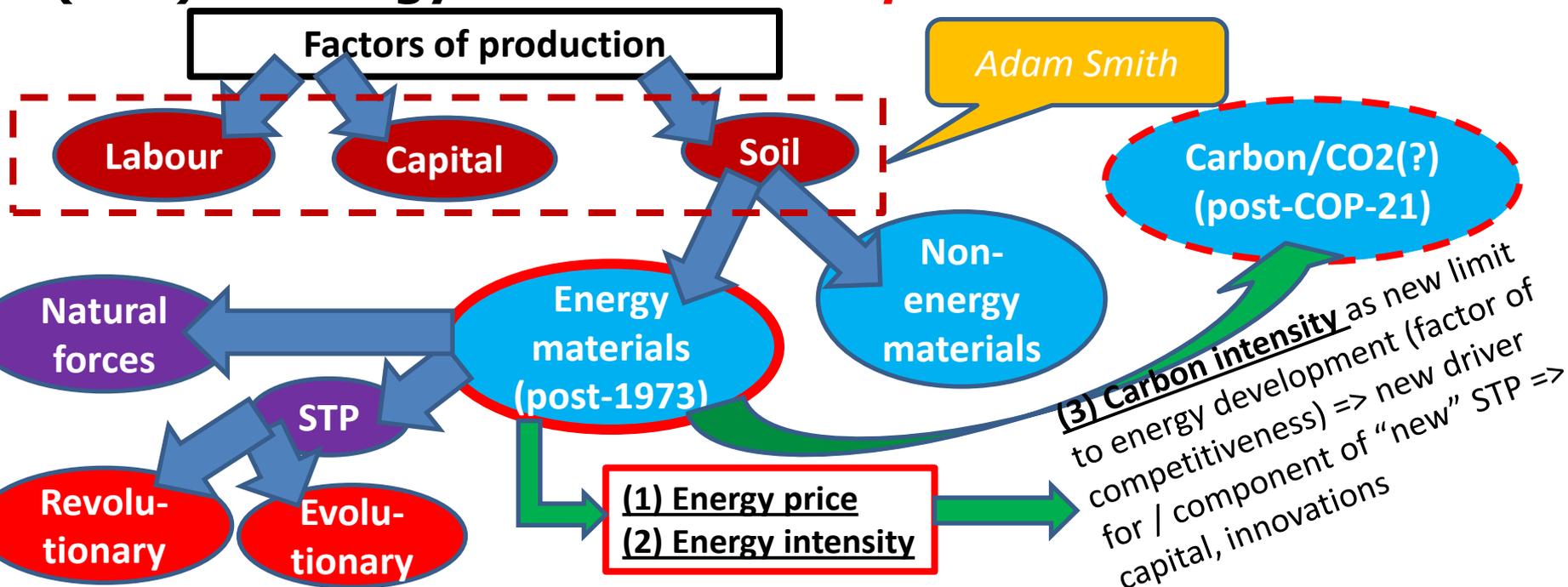
## (29.09.2015): Climate change and financial stability

- “There are three broad channels through which climate change can affect financial stability:
  - First, **physical risks**: the impacts today on insurance liabilities and the value of financial assets that arise from climate- and weather-related events, such as floods and storms that damage property or disrupt trade;
  - Second, **liability risks**: the impacts that could arise tomorrow if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible. Such claims could come decades in the future, but have the potential to hit carbon extractors and emitters – and, if they have liability cover, their insurers – the hardest;
  - Finally, **transition risks**: the financial risks which could result from the process of adjustment towards a lower-carbon economy. Changes in policy, technology and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent.
- The speed at which such re-pricing occurs is uncertain and could be decisive for financial stability.
- Risks to financial stability will be minimised if the transition begins early and follows a predictable path, thereby helping the market anticipate the transition to a 2 degree world.
- Forward-looking regulators consider not just the here and now, but emerging vulnerabilities and their impact on business models.”

This is much important for RF. Why?

Source: <http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx>

# Political economy of energy: factors of production, inter-factors' competition, & Scientific & Technological Progress (STP) in energy – *& current competitive niche for Russia*



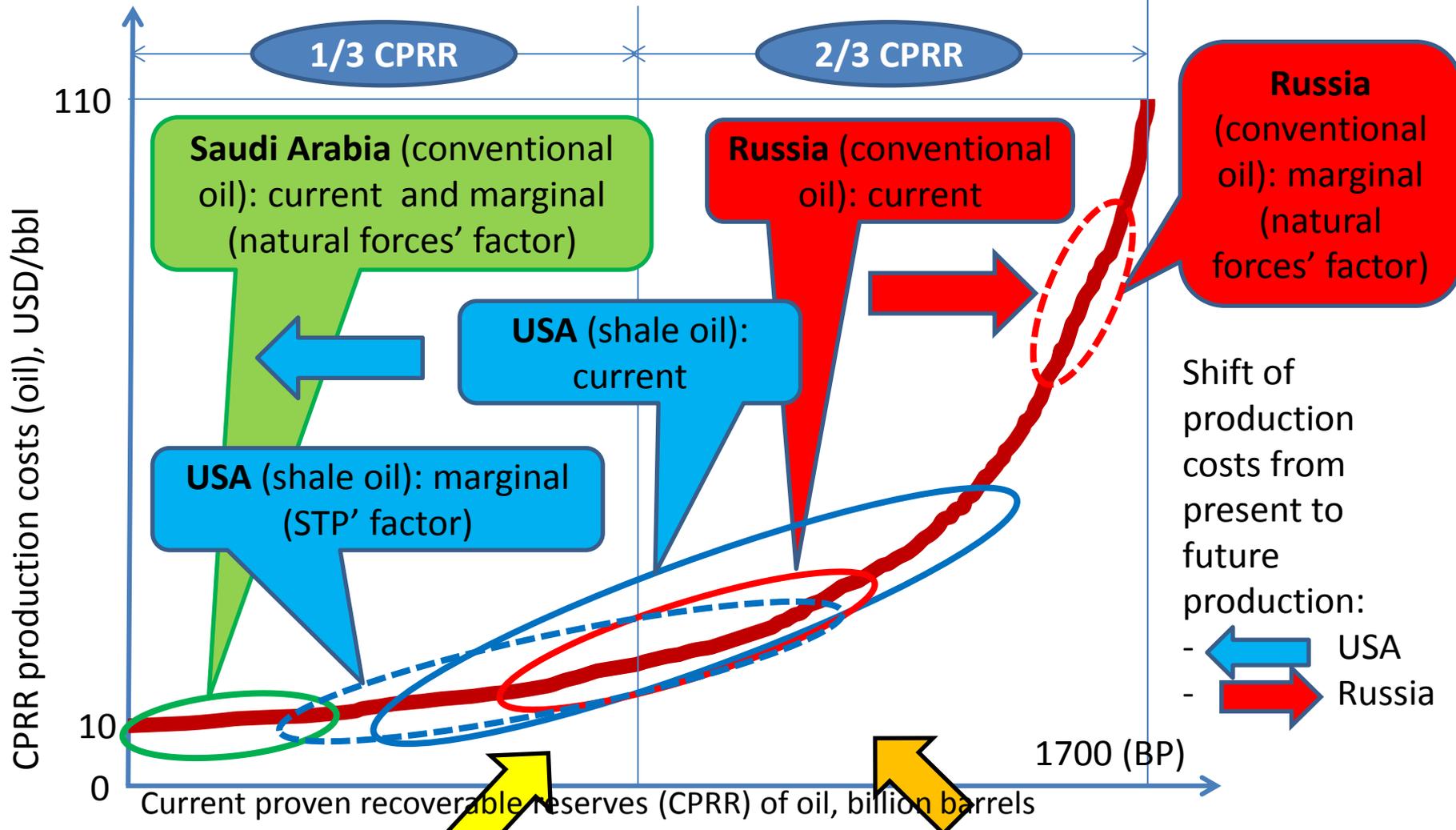
Zones of competitive advantages of different groups of countries:

- Labour: developing (price), developed (quality)
- Capital (financial markets & innovations, technologies): developed (Anglo-Saxon),
- Energy (non-renewables, hydrocarbons): OPEC, USA, Russia => *the only current competitive niche for Russia (?)*

Options for increasing energy efficiency (decrease of energy costs in GDP/GNP) = its substitution by:

1. Other energies => inter-fuel &/or intra-fuel competition (STP)
2. Labour => export of energy-intensive industries to developing states
3. Capital => increase of energy efficiency (STP)
4. Non-energy materials (in non-energy use of energies) => (STP)

# US shale oil & COP-21 influence on global oil supply curve (order of the figures): consequences for Russia



1/3 CPRR of HC= max CO<sub>2</sub> emissions in accordance with COP-21 (IEA)

There may be demand limitation (upper demand limit) for 2/3 CPRR of HC due to exhaustion of CO<sub>2</sub> maximum permissible quotes in accordance with COP-21

# COP-21, low prices, US LNG & fight against Russian gas in EU

- **Q:** If 2/3 of future cumulative CO2 emissions refer to coal & only 15% to gas (IEA), why main victim in the fight for environmental agenda in Europe is (Russian) gas ?
- **A (prerequisite):** Multiple experts/organisations: US LNG might be competitive in EU with Russian pipeline gas **ONLY** if based on cash costs calculations
  - (if COP-21-based demand restrictions + low oil price effects for gas)
  - US LNG: SRMC (cash costs/OPEX) vs LRMC (full costs/OPEX+CAPEX, while CAPEX = debt financing) => compensation of cash costs only increases financial/debt bubble
- => **A (option): Aim of fight against Rus gas in EU: to get rid of the rival within narrowing demand niche for gas? => administrative & other barriers for Russian gas (negative image) to artificially diminish its competitiveness to US LNG In EU?)**
  - A. different recent Western studies: **AS IF RUSSIAN GAS IS MORE DIRTY** than other gases (both pipeline & LNG) &/or other fossil fuels &/or RES (\*),
  - B. Thesis (A) is additive to post-2009 thesis of Russia as if “non-reliable” source of gas
    - *substitution of notions: “non-reliable **source**” vs “non-reliable **transit route from the source**” to the market*
  - C. The Trans-Atlantic fight against NordStream-2 & other Russian UA bypasses
    - *To “softly” force Russia to continue gas supplies to EU post-2019 through more risky & costly UA transit route (?)*

**NB:** Parallel with different other spheres, like f.i. different WADA treatment of US & Russian Olympic & Paralympic athletes in Rio (?)

– *substitution of notions: fact of allowed doping vs source of information (hackers)*

(\*) Source: D. Leonov, N. Sudarev. COP-21 – role of NG in Decarbonization and Sustainability of EU economy.; K. Romanov. The Role of Natural Gas In Decarbonization and Sustainability.// Russia-EU Gas Advisory Council, Work Stream 2 “Internal Markets” meeting, Vienna, E-Control, 01 July 2016 ([http://www.fief.ru/WS2\\_meetings.htm](http://www.fief.ru/WS2_meetings.htm))

# And in the end... Whether the whole concept of man's irreversible impact on climate change is well justified?

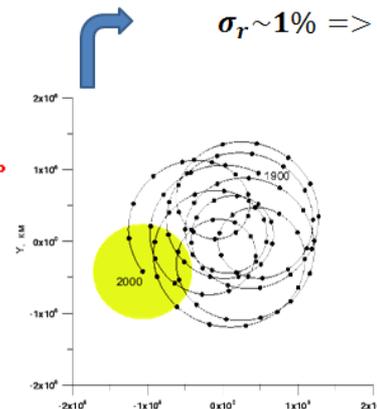
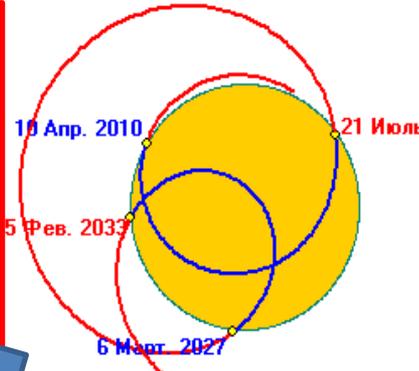
(IPCC, 2014): the effects of anthropogenic greenhouse gas emissions, together with other anthropogenic drivers are “**extremely likely** to have been the **dominant cause** of observed [global] warming since the mid-20th Century”.

**BUT: Specialists in solar activity are well aware of the climate change 178Y cycle !**

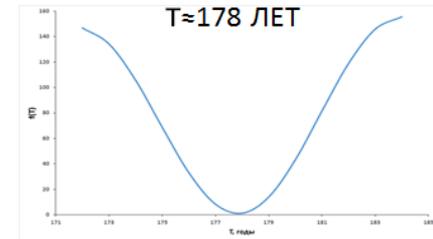
As known, the Earth runs not around the Sun, but around mass center of Solar System (MCSS) which stays away of center of the Sun (CS) & constantly moves. In the period measured by decades deviation of MCSS from CS is comparable with diameter of the Sun => flow of Solar energy to the Earth (cyclically) fluctuates.

These fluctuations ( $\pm 24$  W/sq.m) **BY THE ORDER** (10 times) **HIGHER** than increment of this flow (2.4 W/sq.m), which IPCC called as “result of anthropogenically defined increase in GHG emissions”

“RAS Presidium view, presented at request of RF President, on **TOTAL ABSENCE OF SCIENTIFIC SUBSTANTIATION OF GLOBAL WARMING DOCTRINE** is strongly justified even at the level of elementary appraisals”



$$\sigma_r \sim 1\% \Rightarrow \sigma_I \sim 2\% \Rightarrow 27 \frac{\text{Вт}}{\text{м}^2} \gg 2.4 \frac{\text{Вт}}{\text{м}^2}$$



$$f(T) = \sum_{i=6}^9 \frac{m_i r_i}{T_i} \sin^2 \pi \frac{T}{T_i}$$

Sources: Крученицкий Г.М. Климатическая доктрина РФ и защита национальных интересов России. НЕУСТРАНИМЫЕ ПРОТИВОРЕЧИЯ (в печати); он же. Презентация на Круглом столе «Риски реализации Парижского климатического соглашения для экономики и национальной безопасности России». Аналитический центр при правительстве РФ, 19.07.2016; Крученицкий Г.М., Матвиенко Г.Г. Физические причины долговременной изменчивости глобальной температуры. "Оптика атмосферы и океана" (в печати).

# Final question...

- Whether we (Russia) are not forced to quick & costly transition (without “predictable path” and clear vision of “emerging vulnerabilities and their impact on business models”\*) from the area of our global current competitiveness into the area where our current competitive positions are at least questionable and refer at best to the future?
- Whether COP-21 can not be seen as instrument / element of global competitive struggle with the aim to get rid of the rival(s)? By shortening transition to new energy world to sub-optimal timeframe...
- To well-debate & deeply evaluate first possible negative consequences before decision-making on COP-21 ratification

(\*) Mark Carney

# Thank you for your attention!

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