Working Paper 803/804

Version 1.0

Analysis of Theoretical and Practical Options for Institutional Change that Allow for Sustainable Agricultural Development in Tyumen Province of Russian Federation

PART I – SUSTAINABLE AGRICULTURE IN TYUMEN PROVINCE
PART II – ANALYSIS OF THEORETICAL AND PRACTICAL OPTIONS

Dr. Nataliya Stupak, Humboldt University Berlin

Based on the analysis of legal documents and reports

June 2015

Preface

This document starts with reflection on the sustainability concept and its implications for agricultural sector in Tyumen province. In this way, the understanding of sustainable agriculture is shaped, which provides the basis for the following discussion as to how sustainable agriculture could be achieved. Chapter 2 of the document considers the main challenges to the three aspects of agricultural sustainability in Tyumen province. Chapter 3 reflects which of these challenges are caused by natural factors or the processes of social dynamics, and which are caused by the agricultural and food policy of Russian Federation and Tyumen province.

Based on the insights generated in the first part of the report, its second part reflects on the options of institutional change which would help Tyumen agriculture addressing economic, social and environmental challenges and moving in the direction of sustainability. Having considered the social and political development in Russian Federation within the last years, the concluding chapter 5 assesses the possibility of institutional change in Russian Federation and Tyumen province.

This report should be quoted as follows:

Stupak, Nataliya (2015). *Analysis of Theoretical and Practical Options for Institutional Change that Allow for Sustainable Agricultural Development***;** Part I – Sustainable Agriculture in Tyumen Province, Part II – Analysis of Theoretical Options and Part III – Assessment of Practical Options. SASCHA Report 803/804, version 1.0.

Content

Tables

Abbreviations

EU	European Union
GDP	gross domestic product
GRP	gross regional product
ha	hectare
n/a	not available
RF	Russian Federation
RSFSR	Russian Soviet Federative Socialist Republic
TP	Tyumen province
USA	United States of America
USSR	Union of Soviet Socialistic Republics
WTO	World Trade Organization

PART I: SUSTAINABLE AGRICULTURE IN TYUMEN PROVINCE

1 Sustainable agriculture

1.1 The sustainability concept

In 1987 the Brundland Commission introduced the concept of sustainable development which was defined as "[the] development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN 1987). Several authors observe the vague nature of this definition and discuss numerous interpretations of sustainable development which arise out of the confusion about and lack of consensus on the concept's meaning (e.g. Redclift 1991, Redclift 2005, Lélé 1991).

Considering that in 1980s economic growth was the major development concern, and environmental protection, climate change and social justice were the issues struggling to enter policy discourse, we may assume that the aim of Brundland Commission was to suggest a holistic view on state's development by regarding the physical and social implications of economic growth. Therefore, the Brundland Commission distinguished three aspects of sustainable development: the economic, environmental and social (UN 1987). Instead of being considered integrity, the three components of the process rather lead to three interpretations of sustainable development. Understanding sustainable development as an "ecologically sustainable or environmentally sound development" (Tolba 1984) dominates the international policy discourse.

In accordance with the definition of the sustainability concept, sustainable agricultural development implies defining and achieving economic, social and environmental objectives of agricultural production. Under economic objectives we understand specific financial results of economic activity, levels of production of specific goods, sector's contribution to gross regional product (GRP) and gross domestic product (GDP), attractiveness of (and therefore demand on) agricultural goods and their access to national and international markets etc. The social dimension of sustainable agricultural production specifies the rural development objectives, such as the increasing attractiveness of and living standard in rural areas (in terms of infrastructure, jobs availability and provision of services, opportunities for individual development). Finally, the environmental aspect of sustainable agriculture specifies the reciprocal relationship between the economic activity and ecosystems. To summarize, sustainable agricultural production in Tyumen province can be defined as an economically viable activity which improves the living conditions in rural areas and contributes to environmental protection and sustainable use of natural resources.

The sustainability concept is frequently used in the texts of laws and by-laws which shape agricultural and food policy of Russian Federation. The vagueness of the sustainability concept allows Russian authorities to interpret sustainable agricultural production as stable levels of output generation and food provision, and in this way to justify or embellish specific policy steps (Redclift 2005: 213). This means that development of recommendations regarding the institutional change should be guided not only by specific concepts used in the text of legal documents and policy discourse, but should employ reasons which can motivate policy change towards sustainability.

1.2 Reflecting on reasons

If we want to achieve certain degree of environmental and social responsibility, we should have some good reasons at hand to influence the decision making related to the development of specific economy sector, in our case agriculture. By looking at some examples from the European environmental policies we may reflect what good reasons are.

The **EU renewable energy policy** sets a target to reach a 20% share of renewable energy by 2020 and a 10% share of renewable energy specifically in the transport sector (Directive 2009/28/EC). Though reducing the climate-change effects of energy sector is among the arguments justifying the ambitious goals, a more plausible reason for the adoption of the directive seem to be "the need to…address growing dependency on fossil fuel imports from politically unstable regions outside the EU" (European Commission 2011).

From the early 1990s the **EU agricultural policy** has experienced significant transformation, specifically in the part of state support. Though solving the growing commodity surplus and pursuing the environmentally friendly ways of production are often given as an explanation to the series of policy reforms, there is another reason for the reform process: to sustain the level of state support to agricultural sector under the conditions set by the General Agreement on Tariffs and Trade and since 1995 the WTO Agreement on Agriculture.

The **EU soil protection policy** does not exist as such; soil protection is to some degree addressed by other EU policies (water, agriculture, chemicals etc.). Having adopted the Soil Thematic Strategy, the EU failed to agree on the Soil Directive, the initiative being blocked by Germany, France, Austria, the Netherlands and the UK because of the influence which soil protection measures would have on farming practices and agricultural production in those countries.

The examples above do not aim at undermining the good intentions of the EU in combating the environmental and climate impact of human activities. They, however, demonstrate that implementing good intentions also means addressing the economic, social and nature-related (e.g. availability of non-renewable energy sources) concerns.

Good reasons for policy change are not those that appeal to moral or ethics. Good reasons are those which address the context and the problems of a country or economy sector in question. Exploring the economic, social and physical context, and formulating good reasons in support of environmental and social responsibility while carrying out agricultural production is the task of this report.

1.3 The analytical steps

In this report the analysis and recommendations on the enhancement of sustainability of Tyumen agriculture proceeds by the following steps:

(1) Identifying economic, social, environmental challenges to sustainability of Tyumen agriculture (chapter 2)

(2) Analyzing factors which contribute to these challenges (chapter 2)

(3) Analyzing federal and regional agricultural and food policy to find out, how the challenges to agricultural sustainability are addressed or enhanced (chapter 3)

(4) Discussing the options of institutional change towards agricultural sustainability (chapter 4)

(5) Assessing the potential for these options being implemented and reflecting on the possible reasons to promote institutional change (chapter 5)

2 Challenges to sustainability of agriculture in Tyumen province

This chapter considers the challenges which impede sustainability of Tyumen agriculture. For analytical reasons the challenges are divided into three groups: the economic, social and environmental ones, though such division is not always straightforward, as the challenges are strongly interrelated. The information presented in this chapter is obtained through analysis of Tyumen legal documents, official press releases of Tyumen public authorities as well as news and reports on climate in Tyumen province and its implications for agricultural producers (see Annex 1).

2.1 Challenges to economic aspect of sustainability

Tyumen agriculture seems to face quite a range of challenges related to the economic aspect of sustainability. Low competitiveness of own agricultural products comparing to those imported from other countries or even neighboring provinces, is the main challenge faced by Tyumen agricultural producers and public authorities (e.g. Duma of Tyumen province 2012, 2013e, 2014a, 2014b, 2014c, 2015a, 2015b, 2015d; Government of Tyumen province 2014). The following factors contributing to low competitiveness are most frequently mentioned:

- Low level of technical modernization of agricultural enterprises. This is in spite of the fact that modernization of agricultural production is one of the objectives of the federal and provincial agricultural policy, and subsidies are available for the purchase of new machinery;
- Low level of infrastructure development, for example availability of and access to grain elevators, proximity and state of transport network;
- High production costs, in particular the share of energy costs, in spite of high level of state support to agriculture in the region;
- Low access to financial resources, such as credits and investments;
- Lack of skilled labor in agriculture, which is partly explained by urbanization and reluctance of university graduates to live and work in rural areas.
- Expansion of food import.

Low competitiveness of Tyumen agricultural produce leads to problems with their marketing. The public authorities of Tyumen province consider this an outcome of limited access of provincial producers to markest due to poor market infrastructure and monopolization of trade networks (Government of Tyumen province 2014). One of the solutions seen by the public authorities is to purchase local products for state owned and managed restoration, e.g. canteens in schools, kindergartens etc.

The expansion of food import has been increasingly considered the main problem faced by Russian agriculture since country's accession to the World Trade Organization (WTO). The required change in trade and customs regulations is perceived as opening of domestic markets to foreign products.

Weather variability contributes further to economic unsustainability of agricultural production in Tyumen province. Within the last years summers with severe draughts seem to alternate

with summers with abundant precipitations (see section 2.3 for details). On the one hand, unfavorable weather conditions reduce crops' yields and cause economic losses to agricultural producers. On the other hand, they intensify other challenges already faced by producers: extreme weather events damage infrastructure, the machinery wears out faster if used for harvesting during snow, because of yield loss agricultural producers experience difficulties with paying back credits already taken and limits their ability to take new credits decreases.

Talking about the nature of the challenges considered above, unfavorable climatic conditions and natural hazards is the only problem which is caused by factors beyond human power. The inability of agricultural producers to cope with natural and climatic events are to a large degree an outcome of the way agricultural policy is designed at the federal and regional level.

2.2 Social challenges

The social dimension of agricultural sustainability covers the following aspects: (1) contribution of agricultural production in households to agricultural output, (2) impact of demographic situation in rural areas on agricultural production, and (3) impact of agriculture on social situation in rural areas.

In accordance with provincial statistics, households produce over 50% of agricultural output, the larger share of which falls on crop production (see Table 1). This means that households are of high importance to food security in Tyumen province. Interestingly, in the years with difficult climatic conditions households seem to perform better in crop production than producers of other categories, meaning here that households seem to be able to adapt better to climate variability. The reasons for this phenomenon are briefly discussed in section 3.3 of this report.

Table 1: Agricultural production in Tyumen province by categories of agricultural producers

Type of producer	Share of agricultural output, %									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Agricultural output										
All categories	100	100	100	100	100	100	100	100	100	100
Agr. organizations	43.9	40.7	43.7	42.7	44.7	41.7	45.3	41.8	44.0	43.1
Family farms	3.6	3.8	4.3	4.7	5.0	4.7	6.1	6.3	6.8	6.8
Households	52.5	55.5	52.0	52.6	50.3	53.6	48.6	51.9	49.2	50.1
Share of crop production										
All categories	48.8	51.6	50.5	51.0	48.9	47.3	54.4	45.6	49.0	49.2
Agr. organizations	32.3	29.8	34.9	33.6	35.4	29.8	38.4	31.2	36.4	33.7
Family farms	5.1	4.9	5.8	5.9	6.3	5.7	7.4	7.2	7.9	7.2
Households	62.6	65.3	59.3	60.5	58.3	64.5	54.2	61.6	55.7	59.1
Share of animal production										
All categories	51.2	48.4	49.5	49.0	51.1	52.7	45.6	54.4	51.0	50.8
Agr. organizations	55.1	52.4	52.7	52.3	53.5	52.4	53.5	50.6	51.2	52.2
Family farms	2.0	2.6	2.8	3.3	3.9	3.7	4.6	5.6	5.8	6.5
Households	42.9	45.0	44.5	44.4	42.6	43.9	41.9	43.8	43.0	41.3

Source: Statistical Yearbook "Tyumen Province (1990-2014)", Volume II. Issued by the Federal Service of State Statistics in Tyumen Province in 2015

Decrease in and aging of rural population is one of the main problems in rural areas. As follows from data provided in Table 2, the number of people living in rural areas has been constantly declining within the last ten years. In addition, the share of population of working age has been decreasing and the share of population above working age increasing. At the beginning of 2014 almost one fifth of rural population were pensioners. Since 2008 we observe an increase in rural population below working age. The growing birth rates might increase the share of working population in some years, if the new generation won't migrate to cities by the time of their coming into working age.

Table 2: Demographic situation in rural areas of Tyumen province

Type of producer	Share of agricultural output, %									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Rural population										
Thousand people [1]	760.6	756.8	750.9	747.7	745.3	746.1	741.7	737.5	742.3	717.6
%	23.1	23.0	22.7	22.4	22.2	22.1	21.8	21.3	21.1	20.2
Population below working age										
Thousand people [1]	158.4	152.9	148.8	149.3	151.7	154.2	155.4	158.4	163.9	162.8
%	20.8	20.2	19.8	20.0	20.4	20.7	21.0	21.5	22.1	22.7
Population of working age										
Thousand people [1]	484.2	487.1	484.6	479.1	472.7	467.0	457.9	447.1	441.2	418.2
%	63.7	64.4	64.5	64.1	63.4	62.6	61.7	60.6	59.4	58.3
Population above working age										
Thousand people [1]	118.0	116.9	117.5	119.3	120.9	124.9	128.4	132.0	137.1	136.7
%	15.5	15.4	15.7	15.9	16.2	16.7	17.3	17.9	18.5	19.0

[1] at the beginning of the year

Source: Statistical Yearbook "Tyumen Province (1990-2014)", Volume II. Issued by the Federal Service of State Statistics in Tyumen Province in 2015

Urbanization, aging population and higher death rates comparing to cities lead to abandonment and dissolution of villages. Within the last 10 years 59 villages were officially dissolved by public authorities of Tyumen province (see Table 3). While some of these villages are located in South Taiga and Sub Taiga zones which are characterized by rather unfavorable natural and climatic conditions, a larger part of the villages were dissolved in the forest-steppe zone which is the most suitable for agricultural production within the province.

The demographic situation in Tyumen province can be considered a vicious circle: on the one hand, high migration to the cities and unwillingness of young people to live in rural areas is caused by low living standard and lack of possibilities for personal and professional development in villages; on the other hand, decreasing number of younger generations in rural areas makes public investment in infrastructure, health, cultural and educational establishments unreasonable, in particular in the villages which are close to be abandoned.

The demographic dynamics in rural areas has several implications for agricultural sector of Tyumen province. Firstly, it means abandonment of land suitable for agricultural production and increase in the share of land with unclear property rights. Secondly, many large agricultural enterprises lack labor in rural areas, in particularly high-qualified labor. Thirdly, considering that rural households contribute over 50% of agricultural output, decrease in and aging of rural population threatens food security in Tyumen province.

Table 3: Dissolution of villages in Tyumen province

Region of Tyumen province	Year	N. of villages dissolved
South Taiga:		**9**
Tobolsky	2004	4
Uvatsky	2004	2
Vagaysky	2013	3
Sub Taiga:		**15**
Aromashevsky	2004	4
Nizhnetavdinsky	2004	3
Sorokinsky	2004	1
Vikulovsky	2004, 2015	4
Yarkovsky	2004	1
Yurginsky	2004	2
Forest-steppe Zone:		**35**
Armizonsky	2004	3
Berdyuzhsky	2008, 2013	3
Golyshmanovsky	2004	1
Ishimsky	2004	1
Sladkovsky	2004, 2008	2
Tyumen	2004	8
Uporovsky	2004	1
Vagaysky	2004	15
Zavodoukovsky	2008	1
Total		**59**

Source: Duma of Tyumen province 2015c, 2013a, 2013b, 2013c, 2013d, 2008, 2004.

At the same time we should recognize the importance of agriculture for the well-being of rural population. Large agricultural producers are often the main source of employment in rural areas and subsistent agricultural production enables self-sufficiency in main food products. In this regard we should not exclude a possibility of increasing agricultural production by households in the face of the present difficulties faced by Russia's international trade and rising food prices.

2.3 Environmental challenges

Climate variability

The available news and reports about the weather in Tyumen province for the last ten years (see Annex 1) indicate significant variability of temperatures and precipitations among different years. In 2008, 2010 and 2012 agricultural producers in the region seem to have experienced sever draughts, up to soil draught. In addition the abundance of precipitations during harvesting seems to have become a tendency.

Summer 2008 was characterized by high temperatures which rose over 30°C during in the daytime and remained over 22-25°C during the night (30.08.2008). Together with the lack of precipitations this caused sever draught. For the first time since the beginning of observations soil draught was registered in the four most Southern regions of the province (24.09.2008) with 40 ml. of moisture in 1 m layer of soil and 0 to 5 ml of moisture in 10 cm layer of soil (ibid.). On 30 August 2008 the state of emergency was announced in these regions by public

authorities of Tyumen province (30.08.2008). The precipitations which were lacking during the growth of crops came in the harvesting period, thus worsening the situation (24.09.2008). Already at the end of July decrease of cereals yields by 0.5 tons per hectare was expected (21.07.2008). By that time 30% to 50% of crops had already burned in the three most Southern regions of the province (ibid.). In total 180 agricultural producers in 14 regions of the province lost cereals and leguminous on 46 to 50 thousand hectares of area sown (04.09.2008, 24.09.2009). This also caused significant economic losses. For example, it is estimated that one of the leading agricultural enterprises of Tyumen province lost almost 36 million RUB (29.07.2010).

In 2010 the draught seems to have been even more severe than in 2008. Media wrote such draught had not been observed within the preceding 130 years (22.07.2010, 29.07.2010). There was no rain for more than two months starting with end of May. Monthly precipitation norm being 70 ml., only 40 ml. of precipitations fell from the beginning of May till end of July (10.08.2010), in one of the regions only 4 ml. of precipitations fell within these three months (19.07.2010). As the result, most of the fields in the province had only 40 to 60 ml. of moisture in 1 m layer of soil, in some regions soil moisture fell to 20 ml. per 1 m. of soil layer (29.07.2010). The Southern regions of the province were most affected. Already at the end of July the decision was taken by the Department of Agro-Industrial Complex to convert where possible food crops into forage crops (19.07.2010, 28.07.2010). At the end of July it was estimated that some agricultural producers would lose 30-50% of yields (22.07.2010). In the Southern regions of Tyumen Province 40 to 60% of crops were lost by the end of July causing the loss of one third of yield expected in the province (29.07.2010). By 6 August the damage to 11.7 hectares of sawn areas was observed with loss of about 350 thousand tons of cereals worth 1.4 billion RUB (06.08.2010). The data on the actual losses after the harvesting was completed is not available. The draught of 2010 affected not only the crop subsector, but also caused significant impact of animal production. High temperatures and lack of precipitations damaged perennial and annual grasses; the yield of the former decreased from 2 tons to 0.7 tons per hectare (29.07.2010). Areas with natural grasses, which are used particularly by households for hay production for animals, were also negatively affected (23.07.2010). The expected inability to feed all the animals caused massive sale of cows, especially by households (29.07.2010).

In contrast to 2008-2012, the subsequent summers of 2013, 2014 and 2015 were characterized by extensive precipitations (19.08.2013, 03.09.2013, 12.09.2014). In 2014 draught was experienced during the sowing (11.11.2014). The July and August, contrary to the weather forecast, were characterised by low temperatures and abundant precipitations during growth and harvesting (12.09.2014, 24.10.2014) which increased crop moisture, slowed down their ripening and postponed the harvesting for almost one month. Due to early winter with snowfalls about 20% of grain and 7% of vegetables were covered by snow (20.10.2014). This caused loss of barley and oats (24.10.2014) and caused immense difficulties in harvesting other crops. In spite of the weather difficulties in 2014, the public authorities of Tyumen province were optimistic about the crops yield, claiming it was more than sufficient to ensure food security of the province (08.10.2014, 20.11.2014). Other experts questioned this optimism and pointed out the challenges faced by single farmers, specifically (1) the possibility to sell or to dry their wet grain and the costs associated (24.10.2014, 04.11.2014,

11.11.2014), (2) the inability to pay back credits (04.11.2014), and (3) the need to purchase additional grain for the next sowing campaign (24.10.2014). The economic losses of agricultural producers due to unfavourable weather events constituted 196.97 million RUB (Duma of Tyumen Province, 2015a).

The crops left on the fields after and the overuse of agricultural machinery during the harvesting 2014 complicated the sowing campaign 2015 (25.03.2015). Similar to the preceding year, the summer months 2015 were characterised by precipitations which there threefold of the norm (18.08.2015), which postponed the start of harvesting. The weather condition remained unfavourable through September 2015 (23.09.2015). Add info on yields 2015 comparing to yields 2014

The long-term climate change projections for Tyumen Province forecast increase in average temperature for the whole province and higher degree of dryness for its Southern regions. Currently, however, climate change manifestation takes the form of climate variability and unpredictability when years of draughts give way to years with abundant precipitations and early winters. This has negative impact on agricultural output, as agriculture in the in the South-Taiga and sub-Taiga zones does not yet benefit from climate warming, and producers in the forest-steppe zone experience significant losses both in terms of crop yields and in terms of economic outcomes. These effects and their recognition by the provincial public authorities seem to provide sufficient reason for climate change and adaptation to it being addressed by the provincial, if not federal, agricultural policy.

Availability and quality of water resources

The surface water resources are highly variable due to alternation of High-Water and Low-Water years (Report on Ecological Situation in Tyumen province in 2008). Water discharge can therefore be up to two times higher or lower than average multi-level water discharge. In addition, water discharge is determined by the geographical location and the size of rivers (ibid.). Thus, water discharge in the northern regions of Tyumen province and in larger rivers is more stable (less variable among years) than in southern regions and smaller rivers. Small rivers are in addition characterized by high variability of water discharge within a calendar year, because up to 80% of yearly discharge falls on spring flood (ibid.). This implies that the southern regions of Tyumen province, contributing most to the provincial agricultural output, are the most affected by the variability of the surface water resources. Groundwater resources are also unevenly distributed: the largest share (80.5%) is located in the Uvatsky, Tobolsky and Nozhnetavdinsky regions. The southern regions of the province (Sladkovsky, Kazansky, Berdyuzhsky and Armizonsky) possess only 0.14% of groundwater.

As follows from the reports on ecological situation in Tyumen province, water discharge in the years characterized by high temperatures and lack of precipitations was particularly low (see Table 4), indicating a correlation between climate variability and water discharge. Of all rivers in Tyumen province the Ishim River seems to have been particularly affected: in 2008 the highest water level during spring flood was 2.9 to 5.6 meter lower than average multi-year values, thus estimated as historic low (Report on Ecological Situation in Tyumen province in 2008). Similar situation repeated in 2010 (Report on Ecological Situation in Tyumen province in 2010). In the years with abundant precipitations, the Ishim river basin is characterized by

floods. In 2014 41292 hectares of agricultural land were flooded here, including 15142 hectares of arable land, 17050 hectares of hayland and 9100 hectares of pastures (Report on Ecological Situation in Tyumen province in 2014).

Table 4: Water discharge in the main rivers of Tyumen province

River	Monitoring station in	Water discharge[1]									
		2008		2011		2012		2013		2014	
		m^3/s	%*	m^3/s	%*	m^3/s	%*	m^3/s	%*	m^3/s	%*
Irtysh	Tobolsk	12800	102	1750	82	1580.0	74	2030.0	95	2330.0	108
Ishim	Ishim	24,6	42	26.2	45	36.5	65	35.7	61	147.0	253
Tobol	Korkino	19,7	39	21.2	51	24.8	62	49.4	146	82.5	200
Iset	Isetskoe	36,8	90	69.2	90	35.1	46	109	143	45.1	58
Tura	Tyumen	89,6	81	134.0	64	127.0	61	188.0	95	282.0	136
Pyshma	Bogandinsky	344	75	26.0	23	25.8	23	24.5	66	40.7	110
Iska	Velizhany	48,6	63	1.09	48	1.0	45	1.13	50	3.86	164

[1] Information for years 2009 and 2010 is not available

* to the average multi-year water discharge

Source: Report "On Ecological Situation in Tyumen province" for 2008, 2011, 2012, 2013 and 2014

Agriculture is one of the users of surface water resources in Tyumen province. Though its share in the total water use is very low (1 to 2%) in comparison to industry and housing sector, the availability of surface water resources is of high importance in the dry years. As follows from Table 5, the amount of water used in agricultural production in such years is four times higher than in years with sufficient of abandoned precipitations.

Table 5: Water extraction from surface waters for agricultural needs (including irrigation)

Year	2007	2008	2011	2012	2013	2014
Water withdrawal, million m^3	12.21	11.92	3.79	2.96	2.44	3.08

Source: Report "On Ecological Situation in Tyumen province" for 2007, 2008, 2011, 2012, 2013 and 2014

Not only availability but also quality of surface water resources matters to agricultural production. Used for irrigation or livestock watering, it can have a positive or negative effect on the quality of agricultural output and safety of food produced in the province. In general, water in all rivers of Tyumen province was estimated as having changed from polluted[1] to very polluted (Report on Ecological Situation in Tyumen province in 2013). Though most of river pollution comes from industry and housing sectors, agricultural sector also contributes its share, in particular by wastewaters discharged untreated or poorly treated by large poultry farms (Report on Ecological Situation in Tyumen province in 2011). Besides, agricultural production (application of fertilizers and pesticides, livestock and poultry farms, animal burial

[1] The water quality in Russian Federation is estimated in accordance with classification developed by the Federal Service for Hydrometeorology and Environmental Monitoring, which includes five classes of water quality: 1. Class – "clean", 2 class – "slightly polluted", 3 class – "polluted", 4 class – "very polluted", 5 class – "extremely polluted".

sites and pesticides storage facilities) is one of the major polluters of groundwater (Report on Ecological Situation in Tyumen province in 2014).

Quality of soils on agricultural land

Soils being the main means of agricultural production, their quality determines the quantity and quality of agricultural output. In Tyumen province, the main factors decreasing soil quality are low content of phosphorus and humus, and high acidity (see Table 6). Low potassium content is being observed in the two most northern regions of the province – the Uvatsky and Tobolsky regions.

Table 6: Soil degradation in Tyumen province

	2008	2011	2012	2013	2014
Land inspected, thousand ha	1237.5	1154.6	1097.8	1109.1	1101.5
Low phosphorus content, thousand ha	402.2	412.0	384.5	406.1	414.7
Low potassium content, thousand ha	38.4	176.8	32.3	32.9	32.5
Low humus content, thousand ha	345.2	297.9	275.2	281.1	276.5
High soil acidity, thousand ha	691.1	655.2	655.7	656.9	656.0

Source: Report "On Ecological Situation in Tyumen province" for 2008, 2011, 2012, 2013 and 2014

Low phosphorus content is regularly registered in the north-eastern regions of the province: Uvatsky, Tobolsky, Vagaysky, Aromashevsky, Sorokinsky and Vikulovsky. Among the southern regions, soils with low phosphorus content are found in Sladkovsky and Berdyuzhky ones. The soils in the northern regions located in South Taiga and Sub Taiga are characterized by low humus content (Nizhnetavdinsky, Vagaysky, Tobolsky, Sorokinsky, Yarkovsky, Vikulovsky, Uvatsky and Yurginsky). Soil acidity is prevalent not only in the regions located in South Taiga (Uvatsky region) and sub Taiga (Vikulovsky, Nizhnetavdinsky, Aromashevsky and Yarkovsky), but is a particular problem for the regions of the forest-steppe zone (Uporovsky, Zavodoukovsk, Isetsky and Armizonsky) which by their climatic conditions are particularly favorable for agricultural production. Since 2002 the continuous increase in soil acidity has been observed (Report on Ecological Situation in Tyumen province in 2014). Further soil acidification may lead to transition of heavy metals into mobile forms and their accumulation in agricultural produce (ibid.).

In addition to chemical determinants of soil quality on agricultural land, the erosion processes contribute to the resource degradation. High water erosion (particularly rill erosion) has been observed along the rivers Ishim, Tobol (South of Yalutorovsk), Iset and Tura. Along the Ishim River the rate of water erosion is 30 m^3/ha (Report on Ecological Situation in Tyumen province in 2014).

3 Contribution of agricultural policy to sustainability of Tyumen agriculture

Sustainability of agricultural production in Tyumen province faces many natural/climatic, economic and social challenges. Some of these challenges, for example climate variability, are beyond the influence of one province or even nation, other challenges, for example urbanization and industrialization, accompany economic development. The third group of challenges represents the constraints established by the federal and provincial policies

3.1 Objectives of federal and provincial agricultural policy

Objectives of the federal policy

Objectives of the federal and provincial agricultural policy are considered in details in the SASCHA Report 801 "Legal Framework for Agricultural Production and Environmental Protection in Tyumen Province of Russian Federation".

The Federal Law "On the Development of Agriculture" (Duma of Russian Federation 2006) specifies that agricultural policy of Russian Federation and its subjects aims at food security and the country's independence from food imports. To achieve this aim, the existent threats to agricultural production – economic, social and environmental – should be addressed. In relation to economic aspect of agricultural sustainability, the federal policy thus sets the objectives to (1) increase the competitiveness of Russian agricultural products and Russian agricultural producers, (2) create favourable investment climate and increase agricultural investments, and (3) establish effective market for agricultural products and develop market infrastructure, i.e. to resolve the challenges which also stand in the way to agricultural sustainability in Tyumen province (see chapter 2). The social aspect of sustainability is addressed by the objective to develop rural areas, increase living standard in rural areas and improve the employment possibilities of rural population. The environmental aspect of sustainability is addressed by the policy objective to preserve and restore natural resources used in agricultural production.

At the first site it seems that all three aspect of sustainable agricultural production are addressed by the federal policy. At the same time, the objectives related to the economic aspect of sustainability are much more elaborated that those related to the social and environmental aspects. On the one hand, this might indicate the clear interest of Russian Federation in economic performance of its agricultural sector. On the other hand, the broadly formulated environmental and social objectives provide room to the federal subjects to address their specific rural development and environmental challenges.

Having a closer look at the policy objectives mentioned above, we observe that:

- the objectives related to the economic side of agricultural production are formulated so as to pursue the state interest in food production; economic sustainability and food security of single agricultural producers seems to be of less concern;

- the objectives related to environmental sustainability address the impact of agriculture on natural resources, but does not take into account the impact of climate and environment on agriculture, thus neglecting the necessity to adapt to climate change.

The State Program of Agricultural Development and Regulation of Markets of Agricultural Produce, Raw Materials and Food for 2013-2014 (Government of Russian Federation 2012b) makes the policy objectives more concrete, sets the plan of and measures for their achievement. The initial version of the program was already strongly focused on increase in food production. In December 2014, in response to the trade sanctions introduced by the EU and the US, the program was amended and of food independency was pronounced the main objective of agricultural sector (Government of Russian Federation 2014). Specifically, domestic substitution of imported meat, milk, vegetables, seed potatoes and fruit and berries becomes a priority, thus eventually reducing the social and environmental role of agricultural sector.

Objectives of the provincial policy

The State Program of Tyumen province "The Main Directions of Agricultural development" for 2013-2020 (Government of Tyumen province 2014), is even more production oriented than the respective federal program. If the former does mention "ecologization" of agricultural production[2] among its objectives, the latter aims exclusively at the increase in the amount of agricultural output, the effectiveness and competitiveness of agricultural sector. The sub program "Development of Agri-industrial Production in Tyumen Province" for 2013-2012 sets the following concrete objectives to be achieved by the sector by 2020:

- increase in agricultural production by 9.7%;
- 21% of average profitability of agricultural organizations (taking into account subsidies);
- 1.7 times increase in the salary of employees of agricultural organizations.

Of these three targets only the last one can be assigned to the social aspects of agricultural production, though it does not necessary contribute to rural development in the province, nor does it ensure the increase in the living standard of agricultural workers if inflation progresses faster than salary rise. For example, the monthly average salary in agriculture increased more than 2.7 times within the period 2007-2014. Still, in 2013 it constituted only 46% of the average provincial salary across all sectors of the economy.

To achieve the above targets the Government of Tyumen province considers it necessary to:

- support the increase in the production of the main food categories;
- create conditions for the maintenance and preservation of soil fertility and effective use of land resources;
- increase profitability of agricultural production;
- support production in small units;

[2] i.e. strict ecological control of the use of land, water and other renewable natural resources in agriculture, as well as increase of soil fertility to the optimal level in each concrete zone (Government of Tyumen province 2014).

- create conditions for diversification of rural economy, increase in rural employment and living standard of rural population;
- support agricultural investments and sector's innovative development;
- improve staffing of agriculture.

Though the sub program recognizes the specificity of agricultural production in terms of its dependency on natural and climatic conditions, the main challenges to the achievement of the three target mentioned above are seen in the worsening macroeconomic conditions, namely (1) the disparity of prices for agricultural output vs. industrial output and energy, (2) worsening conditions for competition in agricultural market due to increasing food import, (3) increasing costs of credit resources and difficulty in their access by agricultural producers, and (4) financial instability of agricultural producers.

In general, governance of agricultural production in Tyumen province, meaning here the way goals are formulated and objectives are set, reminds strongly of the planning approach applied in Soviet republics. It seems that a targeted amount of all types of agricultural produce – from milk and meat to cereals and vegetables – is being specified up to a ton. This is evident from the introduction to the sub program "Development of Agri-industrial Production in Tyumen Province" for 2013-2012 and the reports on agricultural production in the province prepared by the Provincial Department of Agri-Industrial Development. For example, the former contains the following statement explaining the results of agricultural production in 2013:

> "The failure to achieve the planned 103.4% for the "index of crop production by producers of all categories (in comparative prices)" by 0.5% is explained by the decrease in the gross production of vegetables in households and lower than expected yields of potatoes in agricultural organizations. The decrease in the "index of animal production by producers of all categories (in comparative prices)" from the planned 100.2% to 98.5% is explained by the shortage in milk production which in its turn is explained by the reduction in the number of livestock in agricultural organizations as well as households" (Government of Tyumen province 2014).

The statement above demonstrates clearly, to which degree agricultural production is "planned" (or probably envisaged or anticipated) by Tyumen public authorities, and which targets are set for agricultural producers to achieve. Frequently, the failure to achieve the production targets is explained by unfavorable climatic conditions. For example, the introduction to the sub program "Development of Agri-industrial Production in Tyumen Province" for 2013-2012 points out that:

- low yields in 2012 (due to sever draught) caused 30% increase in forage and seeds costs;
- shortage of potato yields was caused by sudden frosts in September;
- next to decreasing number of livestock, shortage of milk production is explained by high summer temperatures which influence cow's productivity.

In spite of these officially recognized influences of weather conditions on agriculture and the overall target to increase agricultural output, adapting to climate variability and thus maintaining agricultural output, is not the objective of the provincial agricultural policy. Furthermore, the way agricultural production is being planned in the province does not seem to be a sustainable solution in the conditions of climate variability. The uncertainty regarding,

for example, the year, the period, frequency and the severity of summer draughts or the earliness of winter, both of which damage cereals and the root vegetables respectively, makes any exact planning of crop output unrealistic.

The social, meaning here rural development objectives related to agricultural production are specified in the sub program "Sustainable Rural Development for 2014-2017 and for the period till 2020" of the State Program of Tyumen province "The Main Directions of Agricultural development" for 2013-2020 (Government of Tyumen province 2014). The following targets are expected to be achieved by 2020:

- creating 111044 m^2 of housing for young families and young specialists;
- creation of 2767 new jobs in agricultural organizations;
- achieving of 523.4 billion RUB gross value of agricultural output;
- building 92.4 km of gas distribution network.

Though all of the above rural development targets are important, it is necessary to understand the cause-effect link between rural development and agricultural production as perceived by the public authorities of Tyumen province. Rural development is considered necessary for maintenance of and increase in agricultural production. The opposite correlation, i.e. how can agriculture contribute to rural development, is not considered.

Food security as the main objective of agricultural policy

Next to laws and decrees regulating agricultural production, the Food Security Doctrine of Russian Federation (President of Russian Federation 2010) influences significantly the objectives set for agricultural sector. The main aim for Russian Federation laid down in the doctrine is to become independent of food import from other countries. Though the document mentions different aspects of food security, such as food accessibility, quality and price, the quantity of food produced within Russian Federation seems to be the major objective. The doctrine sets concrete levels of food production in Russian Federation as the share of food consumed by the country's population (see Table 7).

Table 7: Targeted self-sufficiency in food production in Russian Federation

Targeted self-sufficiency in food production, %	Grain	Sugar	Vegetable oil	Meat products	Milk products	Fish	Potatoes
	≥95	≥80	≥80	≥85	≥90	≥80	≥95

Source: Presidential Decree 120 from 30.01.2010 "Food Security Doctrine of Russian Federation for the period till 2020"

The indices of rational nutrition norms, for example the recommended level of meat consumption, may be questioned. What matters most is that these norms are used for setting agricultural production plans by multiplying the legally defined norms of rational nutrition (see Table 8) by the population number. In this way, by comparing the targeted production in Russian Federation with the actual production, the progress in achievement of food security objectives may be monitored and controlled.

The idea of self-sufficiency is transplanted without changes to the subjects of Russian Federation. This means, that not only Russian Federation but also each of its administrative units should be self-sufficient in food production. Such approach to self-sufficiency prevents regional specialization in accordance with climatic and natural conditions, prevents federal subjects from using their comparative advantage and may put some of the regions in a disadvantaged economic position.

Table 8: Norms of food consumption in Russian Federation and Tyumen province

Type of product	Food consumption norms in Russian Federation		Food consumption norms in Ural Federal District[1]	Food consumption norms in Tyumen province[3]
	1993[1]	2010[2]		
Grain and grain products, kg/yr/pers.	137	95-105	105	105
Meat and meat products, kg/yr/pers.	37	70-75	75	75
Milk and milk products, kg/yr/pers.	238	320-340	305	340
Eggs, pcs/yr/pers.	250	260	250	260
Fish and fish products, kg/yr/pers.	-	18-22	-	22
Potatos, kg/yr/pers.	100	95-100	100	100
Vegetables, kg/yr/pers.	150	120-140	150	140

Source: [1]Concept of Food Security in Ural Federal District for the Period till 2020
[2]Order 593 of the Ministry of Health and Social Development of Russian Federation from 2 August 2010 "On Approval of Recommendations Regarding Rational Norms of Food Consumption Consistent with the Healthy Diet"
[3]Decree of the Government of Tyumen province N 1004 from 10.06.2013 "Regional Program of Food Security in Tyumen province for the Period 2011-2020"

The Tyumen province of Russian Federation uses the highest food consumption norms within the span suggested by the Ministry of Health of Russian Federation for calculation of its production targets. These are specified in the Regional Program of Food Security in Tyumen Province for the Period 2011-2020 (Government of Tyumen province 2013). These norms are multiplied by the population in Tyumen province, and in this way the agricultural output required for self-sufficiency in food production is determined. As Table 9 shows, the targeted agricultural output changes depending on the population number.

More interesting is that actual agricultural production in Tyumen province goes beyond food security. The self-sufficiency in production of most food products was achieved already several years ago. Still, further increase in agricultural output remains the main agricultural objective of the public authorities of Tyumen province. For example, in 2015 public authorities of Tyumen province aimed to achieve production of 158 thousand ton meat within the province, which is almost 40% more than produced in 2014, and production of 586 thousand ton of milk, which is 3% more than produced in 2014 (Duma of Tyumen province 2015a).

Table 9: Targeted agricultural output in Tyumen province

Food product	Targeted output for self-sufficiency, thou. ton[1]		Produced in 2010		Produced in 2014	
	2010[2]	2014[3]	thou. tons	%	thou. tons	%
Grain and grain products	140.4	144.7	433.8	306	473.7	327
Meat and meat products	100.3	103.4	101.7	101	113.0	109
Milk and milk products	454.6	468.7	541.0	119	568.2	121
Eggs	347.6	358.4	1285.9	370	1296.5	362
Fish and fish products	29.0	30.3	7.3	25	11.5	38
Potato	133.7	137.8	256.8	192	301.1	218
Vegetables	187.2	193.0	180.2	96	205.0	106

[1] million pieces for eggs
[2] rational nutrition norms (see Table 8 above) multiplied by the population of Tyumen province in 2010 (1.337 million persons)
[3] rational nutrition norms (see Table 8 above) multiplied by the population of Tyumen province in 2014 (1.378 million persons)

Source: Regional Food Security Program of Tyumen Province

To further demonstrate the fallacy in the self-sufficiency reasoning, it is worth mentioning that most of grain (wheat) produced at the territory of Tyumen province is wheat of the quality class III, thus being forage wheat and not designated for human consumption. This means that having achieved the grain production which is three times higher than the amount required by the food-security objectives, the Tyumen province is still far from being self-sufficient in grain production until wheat of III class is used in human diet.

So in such situation we cannot anymore talk about self-sufficiency objectives, and should rather talk about production objectives. Firstly, quantity of output seems to have clear priority over its quality, affordability and accessibility. Secondly, for most food products the production objectives are far beyond the food security objectives. Respectively, as we will see in the next section, the regulation of agricultural production is designed in such way as to ensure the targeted food output

3.2 Instruments of federal and provincial agricultural policy

Instruments of federal policy

State support in form of subsidies is the main instrument to regulate agricultural production in Russian Federation and its single federal subjects. Specifically, the following forms of state support are foreseen by the law (see Annex 2):

- subsidised credits to agricultural producers;
- subsidised insurance of production risks, such as full or partial loss of agricultural yields and perennial plantations resulting from such natural phenomena as draught, dust storms, winterkill, floods etc. The subsidies are provided in the amount of 50% of the insurance premium paid by agricultural producer;
- subsidies to animal and crop production;

- rural development;
- state support of measures to protect and maintain soil fertility and agricultural land. Here the economic stimulation of the fertilizers application is specifically mentioned.

The state support can be provided from two sources: the federal budget and the budgets of single federal subjects. Such system allows for regional variability of state support to agriculture in accordance to specific needs of single administrative units of RF.

Currently, state funding of agricultural sector from the federal budget constitutes almost 75% of the total funding (see Annex 2). Federal subjects contribute only 25% of support to agriculture from their own budgets. This means that they are strongly dependent on the central funding and have to adhere to agricultural objectives and production goals set at the federal level.

As follows from the share of state support to different directions, access of agricultural producers to financial resources (credits and loans) seems to be one of the highest priorities: almost 49% of the overall funding is allocated to this direction of state support. The next priorities are crop production which amounts to 19.2% of the total funding, followed by animal production which receives 13.5% of the overall funding. Social and environmental objectives set for agricultural sector are of significantly lower importance: the former receive 8.6% and the latter – 1.1% of the overall funding.

Judging by the share of funding allocated to different directions of state support, the priorities set at the federal and regional levels are somewhat different. Though support of access to credits and loans receives the largest share of funding from the federal budget as well as the budgets of federal subjects, the latter are ready to allocate to it 30.5% of agricultural support comparing to 55% allocated to the direction from the federal budget. Support to animal production seems to be of higher importance than crop production at the regional level. Here, the former direction of state support receives almost 26% of funding, while the latter – almost 18% (including decoupled support). From the federal budget 9.3% is allocated to animal husbandry, and almost 20% – to crop production. Rural development is more important at the regional level, receiving the share of almost 18% from the regional budgets. At the same time, the importance of soil protection seems to be low, as none of the federal subjects allocates any funds to its support.

In general we observe that objectives related to economic sustainability of agriculture are of higher priority than the objectives related to social and environmental aspects of sustainability. Furthermore, economic sustainability of agricultural production seems to be associated with the financial results of agricultural enterprises; its dependence on the climatic conditions is less recognised. In the face of increasing frequency of extreme weather events which lead to loss of yield and economic losses, only 2.5% of the overall state support to agriculture is allocated to promotion of agricultural insurance. Moreover, most of funding comes from the federal budget.

State support to agriculture in Tyumen province

The situation with the state support to agriculture in Tyumen province deviates from the what is being observed for the Russian Federation in general, specifically in regard of the share of

funding from federal and provincial budgets. Contrary to the majority of other federal subjects, over 60% of state support comes from the provincial budget and only about 40% - from the federal budget (see Annex 3). Production objectives are clearly the priority in the province, and a higher priority than for Russia in general – over 65% of the total funding available is allocated to crop and animal production. Furthermore, animal production is of higher importance, specifically for the provincial authorities who contribute over 90% to the funding of this direction of state support. On the contrary, crop production is to a larger degree supported from the federal budget.

The state support to crop production is provided as "coupled" and decoupled support. The latter category was introduced following the accession of Russian Federation to WTO and the need to reduce domestic support which leads to distortion of production and market. This implies that the decoupled support to crop production should not influence the decisions of agricultural producers as to what to produce and in which amount.

Decoupled state support to crop production is regulated by the Decree 1431 adopted by the Government of Russian Federation on 27 December 2012 (Government of Russian Federation 2012a). The document does not specify the measures which can be funded under this direction. It only suggests vaguely that decoupled subsidies to crop production are provided per 1 hectare of agricultural crops to all types of agricultural producers except households to partially reimburse the costs of:

- agro-technological operations,
- increasing the level of ecological safety of agricultural production,
- increasing soil fertility and quality.

Such vague specification of decoupled state support implies that decision on concrete measures to be financed becomes the responsibility of public authorities of the federal subject, in our case of Tyumen province.

In Tyumen province the decoupled state support to crop production is regulated by the Regulation On the Decoupled Support from the Federal and Provincial Budgets to Crop Producers which was adopted by the Government of Tyumen province on 14 May 2012 (Government of Tyumen province 2012). According to the regulation, the subsidy is provided to producers only under condition of maintenance of or increase in the area of arable land. To receive a subsidy, agricultural producers must provide documentation which confirm costs of agrotechnical operations, measures which increase ecological safety of production and soil fertility. Specifically, the following costs can be reimbursed:

- purchase of seeds, mineral fertilizers and herbicides;
- insurance of areas sawn with agricultural crops;
- liming and gypsuming;

The subsidy rate differs depending on crops grown (see Table 7). The measures of decoupled state support to crop production are identical to the measures financed within the direction "State support to crop production". The fact that the subsidy rate differs among crops means

that the decision of agricultural producers as to the crops produced and the area under them is being influenced and the decoupled support does not actually exist.

Table 10: Rates of decoupled state support to crop producers

Crop	Subsidy rate, RUB/ha
Cereals, leguminous, industry crops, oil crops	650
Potato, vegetables	2500
Forage crops (excluding forage maize)	350
Forage maize	1150

Source: Regulation On the Decoupled Support from the Federal and Provincial Budgets to Crop Producers, adopted by the Government of Tyumen province on 14 May 2012

In supporting crop and animal production, the main interest of Tyumen public authorities seems to lie in the amount of output. That state support does not aim to achieve economic sustainability of the sector is deduced from the fact that most of funding is allocated to the purchase of inputs and increase of the livestock number. Technical and technological modernization of production seems to be of lesser importance: no funding is foreseen for the "Technical and technological modernization, innovative development" direction of state support (see Annex 3).

As regards other directions of state support to agriculture in Tyumen province, access of agricultural producers to financial resources comprises over 20% of the overall funding. Federal budget is the main source of funding here, meaning that this direction of state support is of lesser importance to the provincial public authorities.

The level of support to agricultural insurance, which is less than 1% of the overall funding, is particularly striking in the region with highly variable climatic conditions and high frequency of agricultural losses due to extreme events.

The level of state support to small agricultural producers, meaning here family farms, indicates that in Tyumen province the priority is given to production in large-scale agricultural enterprises. We may therefore expect further decline in the number of family farms.

The environmental and social aspects of agricultural sustainability are poorly addressed by the state support. Quality and fertility of land is not promoted at all. As regards rural development, 12.3% of the total funding is used for housing subsidies for young families who wish to live in rural areas. At the same time, no investments are being made in development of rural infrastructure, thus no contribution is being made to improvement of living standard in rural areas.

Having considered state support to agriculture in Tyumen province, we are forced to conclude that this support does not contribute to the increase of agricultural sustainability. Furthermore, economic, environmental and social sustainability do not seem to be an objectives of the Tyumen public authorities. The main interest lies in production, meaning here the increase of agricultural output by large-scale agricultural producers.

3.3 Impact of agricultural policy on agricultural producers and agricultural output

Agricultural subsidies combined with production plans determine the decisions of Tyumen agricultural producers as to what to produce and in which quantity. Agricultural production is not regulated through command and control, as it was in Soviet times, and it might seem that farmers can make their own production decisions. At the same time, the state support to agriculture in Tyumen province is so high that some agricultural producers cannot afford to give up subsidies and are forced to comply with production plans set by public authorities. Orienting themselves at the production plans, agricultural producers do not perceive the external signals, be it market or environmental ones, and do not adjust their production process respectively. Currently, the state regulation is present only at the production phase of the agrarian economy. Other processes have to be organized by the producers themselves. Marketing of agricultural produce and coping with climatic risks are particularly worth mentioning.

Problems with marketing of agricultural output is a fact in Tyumen province which is perceived by agricultural producers (e.g. 21.01.2015) and is also recognized by public authorities (Governemnt of Tyumen province 2014). At the same time, the situation is quite logical considering the fact that production costs in Tyumen province are higher than in neighboring federal subjects, that interregional trade within RF can be distorted if every member of the federation aims at and is self-sufficient in food production as well as aims to reduce food import from neighboring regions and promote consumption of locally produced food. This situation becomes even more difficult if quality of agricultural produce is taken into account. For example, forage wheat produced in abundance in Tyumen province, cannot be processed for food and all wheat which is not fed to livestock must be sold elsewhere. In such case neither grain security in the province is provided, nor do agricultural producers have good chances to generate income. We cannot expect economic sustainability of agricultural production until Tyumen farmers do not use market signals to organize production but must use market mechanisms to sell what has been produces. In such situation, the often-underlined low profitability of Tyumen producers is not surprising.

Similar situation is observed when it comes to the production challenges related to climate change. While production is regulated by the state, the coping with weather extremes is not. Thus, when it comes to yield losses caused by draughts, floods, early winters etc., the whole weight of solving the problem and its economic consequences is the responsibility of solely agricultural producers. The only available measure of support – the subsidy to costs of agricultural insurance – constitutes only 2.5% of the overall state support to agriculture in Tyumen province. The one-off payments in case of disaster neither reach all farmers affected, nor cover all losses caused. The state regulation of agricultural production also prevents many agricultural producers from adjusting to uncertain environmental conditions, for example through differentiation of crops produced.

Among the three types of agricultural producers, production in households is least supported and planned in Tyumen province. This implies that these producers should be more flexible in adjusting to climatic change. This flexibility and the resulting better performance may be a plausible explanation to the high share of agricultural output generated in households.

3.4 Discussion

Looking at the way agricultural production is being in Russian Federation, it seems that the country is turning back to the Soviet planning tradition. Similar to the Soviet times, generation of agricultural output is being planned in accordance to the expected demand in food which is calculated on the basis of rational nutrition norms. However, the command and control measures which were characteristic of the Soviet centrally-planned agriculture cannot be applied in Russian Federation which was pronounced a market economy, also because of international trade agreements, for example the Agreement on Agriculture in the framework of the WTO membership.

Utilizing subsidies to ensure the achievement of production targets does not change the fact that agricultural production is to a large degree planned, at least when it concerns agricultural enterprises and family farms. As an outcome, when organising their production, producers in Tyumen province do not react to the external signals, be it market or environmental ones.

Planning in agriculture is organized only half way, only until output is generated. Other processes, in particular processing of produce or its marketing, are to be regulated by market mechanisms. In this way Russian agricultural sector is currently torn in between planned and market economy. Being thus inflexible, it is not able to react on and adapt to external challenges, one of them being climate change.

To summarize, the state support to Tyumen agriculture in its current form, on the one hand, reduces the production flexibility of Tyumen farmers thus preventing their adaptation to market conditions and climate change; on the other hand, it neither fosters better adaptation of agricultural sector to climate change nor increase economic security of agricultural producers.

PART II: ANALYSIS OF THEORETICAL AND PRACTICAL OPTIONS FOR INSTITUTIONAL CHANGE THAT ALLOW FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT IN TYUMEN PROVINCE OF RUSSIAN FEDERATION

4 Options of institutional change

This section of the report discusses two options of institutional change in Russian Federation and Tyumen province leading to more sustainable agricultural production and its adaptation to climate change:

- deregulation of agricultural production which implies abolishing different types of restrictions faced by producers in Tyumen province and thus increasing their liberty to take own production decisions and react to the unfavorable climatic conditions;
- top-down implementation of climate change adaptation, meaning here that regional authorities would develop the climate adaptation strategy, specific adaptation measures, and enforce the implementation of these measures by agricultural producers.

The discussion of these two options of adaptation to climate change is provided below. The probability of their implementation in Russian Federation is assessed in Section 5.

4.1 Deregulation of agricultural production

Liberalization is understood as reduction of governmental restrictions of economic or social activity. In reference to agricultural production a narrower understanding of the concept – trade liberalization – is being often utilized, meaning here the abolishment of tariffs and quotas which restrict import and export of agricultural produce. When talking about liberalization in agriculture, the constraints to agricultural production in form of direct regulation, economic instruments or informal mechanisms have been seldom taken into account. Furthermore, their abolishment is often referred to as deregulation, and not liberalization.

Since the break-up of the Soviet Union Russian Federation has implemented a range of reforms in agricultural sector aiming at decentralization of production, privatization of resources and production units, and transition to market as the major form to exchange agricultural produce. The agreement on Russia's accession to WTO should have brought further progress in liberalization and deregulation of agriculture in RF. While liberalization should be achieved by reduction of import tariffs and quotas, deregulation would be contributed to by the obligation of RF to decrease coupled support to agriculture.

Though most of liberalization and deregulation measures and principled do already exist in the text of federal legal documents and international agreements, a significant discrepancy to the actual situation seems to exist. This in particular concerns state regulation of what and in which amount to produce; this has been long considered the Soviet past.

Deregulation of agricultural production requires significant transformation of not only federal and provincial agricultural policies, but, what is more important, the mental embeddedness in the Soviet way of thinking.

Deregulation at the level of agricultural policies implies fundamental reconsideration of the very policy objectives and their respective translation into policy instruments and concreate measures. Right now agricultural policy in RF is driven by the country's food security goal.

While the very achievement of food security does not imply any production restrictions for Russian farmers, the understanding of food security as self-sufficiency in food production and the logical inference that this could be achieved by increase in domestic production, stimulate planning and regulation of production by public authorities. The alternative understanding of food security as access of RF population to food in sufficient quantity and of sufficient quality does not imply increasing domestic production, and might be achieved through better organized agricultural trade which implies:

- specialization of domestic production
- improvement of quality of domestically produced food
- strengthening international partnerships
- negotiating agricultural trade agreements.

This done, the next step would be to adjust agricultural subsidies so that they:

- support food marketing instead of food production;
- are decoupled from production;
- aim at technical and technological development of agricultural sector taking into account new challenges such as climate change.

In this way food security might be achieved without the necessity to regulate actions and decisions of agricultural producers. The liberty of deciding what, in which amount and how to produce would be granted to farmers, and the state support to agriculture would continue without limiting farmers' choices. The latter would thus be able to react to external signals, be it market or climate ones, and respectively adjust their production decisions. Liberalization and deregulation of agriculture in RF would not only promote autonomous adaptation of agricultural producers to climate change, but would also benefit the economic sustainability of agricultural sector by improving the marketing of production inputs and output.

Implementing the above suggested scenario of policy change is a big task. It is, however, impossible without even more fundamental changes in the perception of agriculture, challenges faced by it and the appropriate ways of coping with these challenges.

Right now the organization of agriculture in Tyumen province reminds very much the Soviet central planning: in the same way production plans are established and imposed on agricultural producers. Their operation may strongly depend on the informal mechanisms of agricultural regulation, such as clientelism. Institutional change at this level is a long and incremental process (Williamson 2000). Its success depends on the openness of society to new paradigms of political development and organization of civil society, advancement in knowledge generation, technical and technological progress. This in its turn further depends on the level of Russia's integration in the world economy and the level of democracy.

4.2 Top-down implementation of climate change adaptation

The second option of climate change adaptation in agriculture is for public authorities to thoroughly design and implement adaptation measures. Similar to the option discussed above (section 4.1), this process requires substantial political and societal changes.

First, the understanding of climate change, its manifestations, causes and outcomes should be improved or changed. Right now most of officials and farmers in Tyumen province seem to doubt the existence of the climate change phenomenon. Many acknowledge climate change only because the Climate Change Directive exists, and if the President issued such directive, then climate change must indeed take place. The difficulties to aknowledge climate change could be explained in the following two ways.

(1) There seems to be lack of knowledge on different types of climate change manifestations. Climate change seems to be mostly associated with rise of temperature and warming. Occurrence of early, long and/or severe winters, or wet and cool summers undermines the idea of climate change within the territory of Tyumen province. That climate change may take the form of climate variability characterized by weather unpredictability, severity and frequency of weather extremes, does not seem to be broadly understood.

(2) If assuming the existence of the climate change, most of officials and farmers expect positive effects of the phenomenon for agriculture, namely warmer temperatures, longer vegetation period and the increasing opportunities to shift agriculture northwards. These expectations are in line with the general predictions for Russian Federation. According to many scenarios, the country is expected to benefit from climate change. At the same time, the information and understanding are lacking about the regional differences in climate change manifestations and effects, i.e. that these won't be homogeneous across all Russian Federation. Though the aggregated effect for the country is expected to be beneficial, some of its regions might be worse off than other. The expectation of benefits from climate change might contribute to blanking out climate variability and resistance to associate it with climate change.

Having achieved improvement in the understanding of climate change, the next step would be to integrate the adaptation issues into agricultural policies. This would require amendment of policy objectives and alteration in measures of state support. The policy objectives should not only acknowledge the climate change, but should also indicate adaptation to it as one of the priorities in achieving sustainable agricultural production.

The next step would be a thorough centralized development of climate change adaptation measures. The success of developing appropriate measures would depend on the cooperation with science and the quality of scientific research and recommendations. This implies alteration of the educational system and modification of its agenda. Firstly, new generation of climatologists should be brought up, which will be able to carry out research of high quality and reliability. Secondly, issues related to climate change should be introduced into agendas of other educational programs, for example, agronomy, soil science, economics, agricultural management etc. Thirdly, research on climate change should become more important within universities and research institutes. The process of reforming the research and education requires changing educational policy with its objectives and priorities, additional investments in research, teaching staff with up-to date knowledge and able to transfer this knowledge to students. Of particular importance would be integration of Russian researchers and teaching staff into the international research community. This would allow exchange and acquisition of

knowledge, sharing research results and access to information on novel research methods or climate change adaptation practices.

The top-down implementation of the centrally developed adaptation measures would not be a large problem, as Tyumen farmers seem used to execute decisions taken by public authorities, for example those on what and in which quantity to produce. The main difficulty lies in the alteration of attitude towards climate change, respective policy change and transformation of the education and research system.

5 Probability of the implementation of options of institutional change

The final aim of the SASCHA project is to develop a strategy for sustainable agriculture in Tyumen province. To be implementable, such strategy should base on the in-depth understanding of agricultural production practices, i.e. not only their description, but also their reasons. In this way, the solution to the unsustainable way of production would tackle the core of unsustainable behavior.

In developing final project recommendations, the existing institutions (sets of rules indicating what an individual must, can or may do enforced by collective action) are to be taken into account. Understanding these institutions and their role in shaping agricultural and nature protection policies is the task of sub project (SP) 800. Accordingly, the implementation of the sub project results implies recommendations on policy change in Tyumen province towards more sustainable agriculture.

Implementing the policy change recommendations would not be possible, unless environmental measures lead to the achievement of the already existing policy goals in the field of agriculture. Thus, the strategy for integrating environmental measures must be developed on the basis of the existent policy goals and development priorities. This means that the desired institutional but also mental change should "grow from within". Our task as researchers is to discover the "entry points", i.e. those issues where different action situations overlap and the potential for dialog and constructive search of solutions emerges. At the beginning of the SASCHA project the political context provided us with the following potential entry points:

(1) The Climate Action Plan of Russian Federation. The Plan was ratified on 25 April 2011. At the beginning of the project it was assumed that at some point the provincial climate change plans and their implementation will be requested by the federal authorities and will need to be organized at the provincial level. This would be an excellent opportunity for the members of the SASCHA project to provide up-to-date information on the climate issues in Tyumen province, assist with preparation of the provincial climate action plan, and support provincial authorities in developing specific measures aimed at climate change adaptation.

(2) Accession of the World Trade Organization (WTO) by Russian Federation. Its ratification by the Parliament of RF in August 2012 stimulated the interest of public authorities in Tyumen province in altering state support to agriculture. The existent measures of state support were analyzed within the sub project 800 from the

perspective of their belonging to the yellow or green box, and potential amendments in increase the share of the green-box measures were suggested.

Having worked at the entry point "WTO accession by RF", the SP 800 has achieved significant policy impact: in October 2013 the regional project "Green valley" was launched in Tyumen province, which aimed at organic agricultural production and support of agricultural producers through measures belonging to the WTO "green box".

Unfortunately, since November 2013 – the beginning of the Ukraine crisis, the political situation in Russian Federation has been changing: on the one hand, European Union and the USA introduced a range of economic sanctions against RF. RF responded with sanctions which in particular concern import of food from Europe and the US. On the one hand, the resulting weakening impact of the international agreements on the RF policy has closed the entry point for the SP 800 to assist the change in agricultural policy of Tyumen province; the organic production project was put aside and does not seem to be of any relevance in the nearest future. On the other hand, the mutual sanctions changed the objectives of agricultural policy: increase in domestically produced food and substitution of the banned imported food became of highest priority. In addition, increasing centralization of legal power and decision making has been observed which implies decreasing room of discretion of authorities of Tyumen province. All these developments has been leading to:

(1) Decreasing attention of public authorities and agricultural producers to environmental and climate related issues, and

(2) Increasing regulation of agricultural producers.

To meet the food production objectives, the public authorities of Tyumen province seem to start thinking about the regulation of the agricultural production in households, which provide about 50% of output generated within the province. Currently, the idea of agricultural franchising seems to be particularly favored, and two pilot projects were planned to be launched in January 2016 (29.09.2015, 03.12.2015). Further step towards central planning and regulation is observed in the wish of Tyumen public authorities to establish fixed prices on fuel and fertilizers used in agriculture (27.01.2016).

Considering the recent developments in agricultural policy and regulation of agricultural production, it seems that the implementation of the second option of institutional change "Top-down climate change adaptation" – is more probable in Tyumen province. On the one hand, agricultural production and marketing, except that in households, is already to a large degree planned and controlled by public authorities, so the suitable governance model is already in place. On the other hand, most of agricultural producers in Tyumen province are used to be guided from above, so top-down implementation of climate-change adaptation would not meet significant resistance. The major problems with the 2nd option are (1) high transaction costs of establishing an operational and effective top-down system of climate change adaptation, and (2) comparing to 1st option, higher degree of such system's inflexibility in reacting to climate events, adjusting adaptation measures and changing adaptation behavior.

Implementation of the first option of climate change "Deregulation of agricultural production" seems less realistic, as it requires alteration of political and governance regime.

This option, however, would advance the sustainability of agricultural production more, as it would contribute not only to climate change adaptation, but would also solve problems with marketing of agricultural produce.

The major challenge in implementing both options is the need of some degree of Russia's integration into the world's political community and openness of the country's society. In case of the 1st option the required integration would be in all spheres, including national economy and trade. In case of the 2nd option the integration at least at the level of research and education would be required. Within the last two years we observe gradual self-isolation of Russian Federation, also in the field of research and knowledge exchange.

As regards the acknowledgement of climate change, the evidence of yields loss due to climate variability is the strongest entry point. What is required, is for SASCHA researchers to:

(1) explain the link between agricultural losses and climate;

(2) provide evidence that climate variability is one of climate change manifestations;

(3) stress the necessity of climate change adaptation to avoid yield losses and bankruptcy of agricultural producers within the next years.

References

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. Available online at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0028:EN:NOT

Duma (Parliament) of Russian Federation (2006). Federal Law 264 from 29.12.2006 "On Agricultural Development".

Duma (Parliament) of Tyumen province (2015a). Decree 3212 from 22.10.2015 "About the Information on the Implementation of the Decree 3373 of Tyumen Provincial Duma from 24.11.2011 "On Recommendations of the Round-Table "Achievement of Food Security in Tyumen Province: Challenges and Perspectives".

Duma (Parliament) of Tyumen province (2015b). Decree 2933 from 28.05.2015 "Information on the Implementation of the Decree 1063 of Tyumen Provincial Duma from 25.04.2013 "On Recommendations of the Round-Table "Tasks of Agri-Industrial Complex of Tyumen Province in the Conditions of Russia's Membership in WTO".

Duma (Parliament) of Tyumen province (2015c). Draft Law from 19.03.2015 "On Dissolution of some Settlements in Tyumen Province and Amendment of Several Laws of Tyumen Province".

Duma (Parliament) of Tyumen province (2015d). Information about the execution of the Decree 394 from 28.06.2012 "On Recommendations of the Deputy Day "Problems and Perspectives of Animal Husbandry in Tyumen province"; presented to the Duma by Vice-Governor of Tyumen Province on 04.02.2015.

Duma (Parliament) of Tyumen province (2014a) Decree 2129 from 26.06.2014 "On Information about the Execution of the Decree 1539 of Duma of Tyumen Province from 25.06.2009 "On Recommendations of the Roundtable "Agricultural insurance; Problems and Perspectives".

Duma (Parliament) of Tyumen province (2014b). Decree 2335 from 23.10.2014 "On Information about the execution of the Decree 1260 from 27.06.2013 "On Recommendations of the Deputy Day "Social-Economic Development of Rural Territories".

Duma (Parliament) of Tyumen province (2014c). Decree 1748 from 13.02.2014 "On Information about the execution of the Decree 2847 from 21.04.2011 "On Implementation of Programs of Resource and Energy Efficiency in Agro-Industrial Complex of Tyumen Province".

Duma (Parliament) of Tyumen province (2013a). Law 104 from 27.12.2013 "On Dissolution of some Settlements in Tyumen Province and Amendment of Several Laws of Tyumen Province".

Duma (Parliament) of Tyumen province (2013b). Law 91 from 02.12.2013 "On Dissolution of some Settlements in Tyumen Province and Amendment of Several Laws of Tyumen Province".

Duma (Parliament) of Tyumen province (2013c). Law 104 from 27.12.2013 "On the Abolishment of some Settlements in Berdyuzhski Rayon of Tyumen province and amendments of some laws of Tyumen province".

Duma (Parliament) of Tyumen province (2013d). Law 91 from 02.12.2013 "On the Abolishment of some Settlements of Tyumen province and amendments of some laws of Tyumen province".

Duma (Parliament) of Tyumen province (2013e). Decree 889 from 14.02.2013 "On Information about the Execution of the Decree 1539 of Duma of Tyumen Province from 25.06.2009 "On the Recommendations of the Roundtable "Agricultural insurance; Problems and Perspectives".

Duma (Parliament) of Tyumen province (2012). Decree 1651 from 19.12.2013 "On Information about the Execution of the Decree 778 of Duma of Tyumen Province from 20.12.2012 "On the Development of Market Infrastructure for Agricultural Produce in Tyumen Province".

Duma (Parliament) of Tyumen province (2008). Law 29 from 07.06.2008 "On Dissolution of some Settlements in Tyumen Province and Amendment of Several Laws of Tyumen Province".

Duma (Parliament) of Tyumen province (2004). Law 254 from 07.10.2004 "On Dissolution of Some Settlements in Tyumen Province".

European Commission (2011). Renewable Energy: Progressing towards the 2020 target. Communication from the Commission to the European Parliament and the Council COM(2011) 31 from 31.01.2011. Available online at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011DC0031:EN:HTML:NOT

Federal Service of State Statistics in Tyumen Province (2015). Statistical Yearbook "Tyumen Province (1990-2014)", Volume II.

Government of Russian Federation (2014). Decree 1421 from 19.12.2014 "On Amendments to the State Program of Agricultural Development and Regulation of Agricultural Markets, Raw Materials and Food for 2013-2010".

Government of Russian Federation (2012a). Decree 1431 from 27.12.2012 "Rules for Allocation of Subsidies from the Federal Budget to Budgets of the Subjects of Russian Federation to Province Decoupled Support to Agricultural Producers in the Field of Crop Production".

Government of Russian Federation (2012b). Decree 717 from 14.07.2012 "On the State Program of Agricultural Development and Regulation of Agricultural Markets, Raw Materials and Food for 2013-2010".

Government of Tyumen province (2014). Decree 699 from 30.12.2014 "On the Approval of the State Program of Tyumen Province "The Main Directions of Agri-industrial development" for 2013-2020".

Government of Tyumen province (2013). Decree 1004 from 10.06.2013 "Regional Program of Food Security in Tyumen province for the Period 2011-2014".

Government of Tyumen province (2012). Decree 180 from 14.05.2012 "On Approval of the Procedure of Allocation of Funds from Federal and Provincial Budgets to State Support of Agricultural Production" (version from 01.09.2014).

Lélé, Sharachchandra M. (1991). Sustainable Development: A Critical Review. World Development 19 (6), 607-621.

Ministry of Health of RF (2012). Order 593 from 02.08.2012 "Rational Nutrition Norms".

Plenipotentiary of the President of RF in Ural Federal District (2010). Concept of Food Security in Ural Federal District for the Period till 2020. Available online at: http://www.uralfo.ru/db/files/koncepciya_prodovolstvennoy_bezopasnosti_ufo.doc.

President of Russian Federation (2010x). Decree 120 from 30th of January 2010 "On Approval of the Food Security Doctrine of Russian Federation".

Redclift, Michael (1991). The Multiple Dimensions of Sustainable Development. Geography 76 (1), 36-42.

Redclift, Michael (2005). Sustainable Development (1987-2005): An Oxymoron Comes of Ages. Sustainable Development 13, 212-227.

Report “On Ecological Situation in Tyumen province in 2007” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 30.09.2014 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=10944415@cmsArticle

Report “On Ecological Situation in Tyumen province in 2008” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 30.09.2014 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=10944416@cmsArticle

Report “On Ecological Situation in Tyumen province in 2010” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 30.09.2014 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=10634587@cmsArticle

Report “On Ecological Situation in Tyumen province in 2011” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 30.09.2014 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=10922884@cmsArticle

Report “On Ecological Situation in Tyumen province in 2012” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 30.09.2014 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=11063983@cmsArticle

Report “On Ecological Situation in Tyumen province in 2013” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 30.09.2014 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=11187286@cmsArticle

Report “On Ecological Situation in Tyumen province in 2014” prepared by the Department of Subsoil Resources and Ecology of Tyumen Province. Accessed on 05.10.2015 at: http://admtyumen.ru/ogv_ru/about/ecology/eco_monitoring/more.htm?id=11311114@cmsArticle

Tolba, M. K. (1984). The premises for building a sustainable society. Address to the World Commission on Environment and Development, October 1984. Nairobi: United Nations ronment Programme.

UN (1987). Our Common Future. Report of the World Commission on Environment and Development, UN Document A/42/427. Available at: http://www.un-documents.net/our-common-future.pdf; retrieved on 26.09.2012.

Williamson, Oliver E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. Journal of Economic Literature 38 (3): 595-613.

Annex 1: Pieces of news considered in the discourse analysis

Date	Title	News portal	Link	Accessed on
19.04.2005	This year's yields will be insured against natural disasters	Strakhovanie Segodnya	http://www.insur-info.ru/press/11788/	18.05.2015
21.07.2008	Vice-Gouverneur of Tyumen province, Director of the Department of Agri-Industrial Complex Vladimir Kovin: Because of draught about 5 quintal pro hectare of grain yields is already lost	Ural Business Consulting	http://su.urbc.ru/196569-post196569.html	18.05.2015
30.08.2008	Tyumen Province: the state of emergency is announced in four southern regions	Agro Obozrevatel	http://agrotime.ru/news_russian.php?subaction=showfull&id=1220082075&archive=&start_from=&ucat=2&	18.05.2015
01.09.2008	In Tyumen province the farmers affected by draught will be supported	Tyumenslaya Liniya	http://t-l.ru/48084.html	18.05.2015
04.09.2008	Tyumen won't stay without bread?	Krestyanskie Vedomosti	http://72.ru/text/news/61212-print.html	18.05.2015
24.09.2008	Director of the Department of Agri-Industrial Complex Vladimir Kovin: 180 agricultural producers were affected by draught in 2008	Ural Business Consulting	http://su.urbc.ru/print:page,1,202988-post202988.html	18.05.2015
19.07.2010	Tyumen farmers successfully withstand draught	RIA Novosti	http://ria.ru/eco/20100719/256335298.html	18.05.2015
19.07.2010	Temperature records threaten Russians' health and economy	RIA Novosti	http://ria.ru/economy/20100719/256395457.html	18.05.2015
22.07.2010	Such draught has not been known in Tyumen province for 130 years	Region Tyumen	http://tyumen.rfn.ru/rnews.html?id=72215&cid=6	18.05.2015
23.07.2010	Tyumen province. Draught forces Tyumen citizen procuring forage in bogs and floodplains	Forage Online	http://www.furazh.ru/n/4663	18.05.2015
28.07.2010	Because of draught parts of grain crops will be converted into forage	NakanuneRU	http://www.nakanune.ru/service/print.php?news=2202452	18.05.2015
29.07.2010	Ear loss. Provincial authorities try to alleviate the outcomes of crop failure	Rossiyskaya Gazeta	http://www.rg.ru/printable/2010/07/29/reg-ural/urogay.html	18.05.2015
30.07.2010	Only five regions of the province avoided wilting of crops	72.ru	http://72.ru/text/newsline/306838-print.html	18.05.2015
30.07.2010	Provincial farmers estimated 12 million rubble damage from draughts	Nash Gorod	http://www.nashgorod.ru/news/news34580.html	18.05.2015
06.08.2010	Press-release 6 August 2010	Plenipotentiary of the President	http://www.uralfo.ru/press_06_08_2010_print.html	18.05.2015
10.08.2010	Draught made corrections	Tyumen Media	http://tyumedia.ru/print/13748.html	18.05.2015
26.08.2010	Grain yield decreased in the province.	72.ru	http://72.ru/text/news/31	18.05.2015

	What will happen to bread prices?		3919-print.html	
20.09.2010	Homespun truth	Expert Ural	http://www.expert-ural.com/archive/37-435/sermyazhnaya-pravda.html	18.05.2015
23.09.2011	A record grain yield is being expected in Tyumen province	AGRORU.com	http://www.agroru.com/news/750584.htm	20.05.2015
31.07.2012	Ishim producers fight weather for yield	Tyumen Media	http://tyumedia.ru/print/97262.html	20.05.2015
14.08.2012	Food security: each ton of grain contains state support from province authorities	72.ru	http://t-l.ru/print/143137.html	20.05.2015
16.08.2012	Tyumen agri-industrial complex minimized loss of crops	72.ru	http://72.ru/text/newsline/554245-print.html	20.05.2015
19.08.2013	In Uporovsky region moisture prevents harvesting	Tyumenskaya Liniya	http://t-l.ru/print/161167.html	20.05.2015
03.09.2013	Tyumen farmers take the lead in yields over neighbors	72.ru	http://72.ru/text/newsline/696655-print.html	20.05.2015
12.09.2014	Chaymetov: agricultural workers do all possible to preserve yield	72.ru	http://72.ru/text/newsline/843183-print.html 1 von	20.05.2015
08.10.2014	There will be enough of bread	Tyumen Segodnya	http://www.tumentoday.ru/2014/10/08/хлеба-будет-вдоволь/	20.05.2015
20.10.2014	Tyumen farmers were forced to stop harvesting because of snowfall	NakanuneRu	http://www.nakanune.ru/service/print.php?news=2373687	20.05.2015
24.10.2014	Raising ears: How yield is being saved from under the snow on fields in Trans-Ural	Radio Vesti	http://radiovesti.ru/article/show/article_id/151473	20.05.2015
28.10.2014	Province farmers are working in spite of severe snowfall – 93% of yield has been harvested	Administration of Tyumen Province	http://admtyumen.ru/ogv_ru/news/subj/more.htm?id=11209414@egNews	20.05.2015
04.11.2014	Bread under snow	Novaya Gazeta	http://www.novayagazeta.ru/economy/65977.html	20.05.2015
11.11.2014	What will autumn 2014 teach: overview of agricultural insurance sector	Kompanii Urala	https://ufirms.ru/articles/analytics/chemu-nauchit-osen-2014-obzor-stra	20.05.2015
20.11.2014	Rating of regions. Wheat yield in 2014	Agro2b	http://agro2b.ru/ru/companiesnews/18958-Rejting-regionov-Urozhaj-pshenicy-2014-godu.html	20.05.2015
21.01.2015	A thorny path to the counter	Tyumenskaya Gazeta	http://tyum-pravda.ru/№-007-19395-21-yanvarya-2015-g/apk.html	13.11.2015
25.03.2015	Sowing will be difficult: part of yield is under the snow	Nash Gorod	http://www.nashgorod.ru/news/news73179.html	17.09.2015
28.05.2015	The Plenipotentiary appealed to farmers to ensure yield	Tyumenskaya Liniya	http://t-l.ru/print/191921.html	17.09.2015

12.08.2015	Vladimir Cheymetov: "Bad weather slows down yield harvesting in the province"	72.ru	http://72.ru/text/newsline/66272876548096-print.html	17.09.2015
18.08.2015	Tyumen farmers accelerate harvesting of vegetables in spite of rain	Region-Tyumen	http://tyumen.rfn.ru/rnews.html?id=215469	17.09.2015
25.08.2015	Weather in Tyumen province challenges harvesting	72.ru	http://72.ru/text/newsline/71042123157504-print.html	17.09.2015
23.09.2015	Harvesting in Tyumen province is being halt by weather	NewsProm. Ru	http://newsprom.ru/print/214767.html	17.09.2015
29.09.2015	Agricultural franchising will contribute to the development of small business in rural areas	Vsluh.ru	http://www.vsluh.ru/news/economics/298303	01.02.2016
03.12.2015	Agricultural franchising in a country-stile: the new way of agricultural development	Vsluh.ru	http://www.vsluh.ru/news/economics/300492	01.02.2016
27.01.2016	The deputies suggest to support agricultural producers	Official website of Duma of Tyumen province	http://www.duma72.ru/ru/arena/new/news/609/39831/?print=Y	01.02.2016

Source: Own compilation

Annex 2: State support to agriculture in Russian Federation

Directions and measures of state support to agriculture	Overall funding		From federal budget			From provincial budget		
	1000 RUB	%	1000 RUB	% [1]	% [2]	1000 RUB	% [1]	% [3]
Direction 1: Partial reimbursement of producers' expenditures on agricultural insurance:	***4923029***	***2.5***	***4296235***	***87.3***	***2.9***	***626794***	***12.7***	***1.2***
1.1 Partial reimbursement of producers' expenditures on agricultural insurance in the field of crop production	4398424	2.2	3858319	87.7	2.6	540105	12.3	1.1
1.2 Partial reimbursement of producers' expenditures on agricultural insurance in the field of animal husbandry	524605	0.3	437916	83.5	0.3	86689	16.5	0.1
Direction 2: Partial reimbursement of interest on credits and loans	***96830087***	***48.8***	***81513103***	***84.2***	***55.0***	***15316984***	***15.8***	***30.5***
2.1 Partial reimbursement of interest on investment credits (loans) used for the development of crop production, processing, development of infrastructure and logistics of crop produce markets	14374133	7.2	11552991	80.4	7.8	2821142	19.6	5.6
2.2 Partial reimbursement of interest on investment credits (loans) used for the development of animal production, processing, development of infrastructure and logistics of animal produce markets	29564926	14.9	23323294	78.9	15.7	6241632	21.1	12.4
2.3 Partial reimbursement of interest on investment credits (loans) used construction and reconstruction of establishments for meat farming	5383001	2.7	5073907	94.3	3.4	309094	5.7	0.6
2.4 Partial reimbursement of interest on investment credits (loans) used construction and reconstruction of establishments for dairy farming	2616824	1.3	2291814	87.6	1.5	325010	12.4	0.6
2.5 Partial reimbursement of interest on short-term credits (loans) used for the development of animal production, processing and marketing of animal produce	10700863	5.4	9012751	84.2	6.1	1688112	15.8	3.4
2.6 Partial reimbursement of interest on short-term credits (loans) used for the development of crop production, processing and marketing of crop produce	23182916	11.7	20323374	87.7	13.7	2859542	12.3	5.7
2.7 Partial reimbursement of interest on short-term credits (loans) used for development of dairy cattle breeding	146268	0.1	105905	72.4	0.1	40363	27.6	0.1
2.8 Partial reimbursement of interest on short-term credits (loans) used for processing of crop and animal produce	2791652	1.4	2602206	93.2	1.8	189446	6.8	0.4
2.9 Partial reimbursement of interest on long-term, middle-term and short-term credits (loans) taken by small forms of agricultural producers	8069504	4.1	7226862	89.6	4.9	842643	10.4	1.7
Direction 3: State support to animal husbandry	***26732293***	***13.5***	***13835694***	***51.8***	***9.3***	***12896599***	***48.2***	***25.7***
3.1 Development of dairy farming	16862382	8.5	8120583	48.2	5.5	8741798	51.8	17.4
3.2 Support to animal breeding	6522196	3.3	4219936	64.7	2.8	2302260	35.3	4.6

3.3 Support to pedigree beef cattle	716083	0.4	379367	53.0	0.2	336716	47.0	0.7
3.4 Partial reimbursement of expenditures on increasing the livestock of reindeer, red deer and meat horses	1805210	0.9	380239	21.1	0.3	1424971	78.9	2.8
3.5 Partial reimbursement of expenditures on increasing of female goats and sheep	826410	0.4	735569	89.0	0.5	90841	11.0	0.2
3.6 Support to production and marketing of wool	13	0.0	-	-	-	13	100	0.0
Direction 4: State support to crop production	***8017841***	***4.0***	***6450946***	***80.5***	***4.4***	***1566895***	***19.5***	***3.1***
4.1 Partial reimbursement of expenditures on planting and management of vineyards	1155414	0.6	1002962	86.8	0.7	152453	13.2	0.3
4.2 Partial reimbursement of expenditures on purchase of seeds, taking into account their delivery to the Far Northern regions and territories equivalent to them	305393	0.2	261515	85.6	0.2	43878	14.4	0.1
4.3 Partial reimbursement of expenditures on purchase of elite seeds	3246173	1.6	2395202	73.8	1.6	850971	26.2	1.7
4.4 Partial reimbursement of expenditures on planting and management of perennial fruit and berry gardens	2598834	1.3	2242173	86.3	1.5	356661	13.7	0.7
4.5 Partial reimbursement of expenditures on eliminating old fruit gardens and improvement of land	118317	0.0	103608	87.6	0.1	14709	12.4	0.0
4.6 Crop production on low productive land of far North and territories equivalent to it	593710	0.3	445486	75.0	0.3	148224	25.0	0.3
Direction 5: Decoupled support to crop production	***30185349***	***15.2***	***22820412***	***75.6***	***15.4***	***7364938***	***24.4***	***14.7***
5.1 Decoupled support to crop production	30185349	15.2	22820412	75.6	15.4	7364938	24.4	14.7
Direction 6: State support to small forms of agricultural producers	***8955804***	***4.5***	***6719531***	***75.0***	***4.5***	***2236273***	***25.0***	***4.4***
6.1 Partial reimbursement of expenditures of family farms, including individual entrepreneurs, related to privatization of agricultural land	66423	0.0	44531	67.0	0.0	21892	33.0	0.0
6.2 Development of family animal farms	4220271	2.1	3075000	72.9	2.1	1145271	27.1	2.3
6.3 Support to starting farmers	4066466	2.1	3200000	78.7	2.1	866466	21.3	1.7
6.4 Grants to agricultural consumer cooperatives for infrastructure development	602644	0.3	400000	66.4	0.3	202644	33.6	0.4
Direction 7: State support to regional programs of economic importance	***3599003***	***1.8***	***2366488***	***65.8***	***1.6***	***1232515***	***34.2***	***2.5***
7.1 State support to regional programs of economic importance in the field of meat farming	3586003	1.8	2366488	66.0	1.6	1219515	44.0	2.4
7.2 State support to regional programs of economic importance in the field of crop production	13000	0.0	-	-	-	13000	100	0.1
7.3 State support to regional programs of economic importance in the field of animal husbandry	-	-	-	-	-	-	-	-
Direction 8: Technical and technological modernization, innovative development	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
8.1 Subsidies to producers of agricultural machinery	-	-	-	-	-	-	-	-
8.2 Grants to implementation of promising innovation projects in agriculture	-	-	-	-	-	-	-	-

8.3 Partial reimbursement of expenditures on foundation and modernization of agricultural establishments	-	-	-	-	-	-	-	-
Direction 9: Federal targeted program "Sustainable Rural Development for 2014-2020 and the period till 2020"	***17058734***	***8.6***	***8050500***	***47.2***	***5.4***	***9008234***	***52.8***	***17.9***
9.1 Housing subsidies to rural citizen, including young families and young professionals	7609518	3.8	4068000	53.5	2.7	3541518	46.5	7.0
9.2 Grant to the development of social and engineering infrastructure in rural settlements, construction and reconstruction of roads	9305730	4.7	3897000	41.9	2.6	5408730	58.1	10.8
9.3 Grants to support local initiative of rural citizen	143486	0.1	85500	59.6	0.1	57986	40.4	0.1
Direction 10: Federal targeted program "Restoration of Agricultural Land for 2014-2020"	***2274800***	***1.1***	***2274800***	***100***	***1.5***	***-***	***-***	***-***
10.1 Grants to construct, reconstruct and modernize land irrigation and drainage systems for public and individual use, as well as separate hydrotechnical construction s belonging to agricultural producers	1950700	0.9	1950700	100	1.3	-	-	-
10.2 Grants to privatize ownerless irrigation and drainage systems and hydrotechnical constructions, excluding judicial fees	1000	0.0	1000	100	0.0	-	-	-
10.3 Grants to implement agroforestry measures	193700	0.1	193700	100	0.1	-	-	-
10.4 Grants to implement land clearance operations	129400	0.1	129400	100	0.1	-	-	-
Total funding	**198576940**	**100**	**148327708**	**74.7**	**100**	**50249233**	**25.3**	**100**

[1] Share of the overall funding
[2] Share of funding from the federal budget
[3] Share of funding from regional budgets

Source: Ministry of Agriculture of Russian Federation, Information directory on the amount and allocation of state support to agriculture in Russian Federation (as on 24.09.2015). Accessed at http://www.gp.specagro.ru/region/5356/2/16/10/2015 on 19.10.2015.

Annex 3: State support to agriculture in Tyumen province

Directions and measures of state support to agriculture	Overall funding		From federal budget			From provincial budget		
	1000 RUB	%	1000 RUB	% [1]	% [2]	1000 RUB	% [1]	% [3]
Direction 1: Partial reimbursement of producers' expenditures on agricultural insurance:	***16175***	***0.7***	***2675***	***16.5***	***0.3***	***13500***	***83.5***	***0.9***
1.1 Partial reimbursement of producers' expenditures on agricultural insurance in the field of crop production	10500	0.5	-	-		10500	100	0.7
1.2 Partial reimbursement of producers' expenditures on agricultural insurance in the field of animal husbandry	5675	0.2	2675	47.1	0.3	3 000	52.8	0.2
Direction 2: Partial reimbursement of interest on credits and loans	***504451***	***20.7***	***385451***	***76.4***	***42.5***	***119000***	***23.6***	***7.8***
2.1 Partial reimbursement of interest on investment credits (loans) used for the development of crop production, processing, development of infrastructure and logistics of crop produce markets	119484	4.9	85484	71.5	9.4	34000	28.5	2.2
2.2 Partial reimbursement of interest on investment credits (loans) used for the development of animal production, processing, development of infrastructure and logistics of animal produce markets	37011	1.5	26811	72.4	3.0	10200	27.6	0.7
2.3 Partial reimbursement of interest on investment credits (loans) used construction and reconstruction of establishments for meat farming	-	-	-	-	-	-	-	-
2.4 Partial reimbursement of interest on investment credits (loans) used construction and reconstruction of establishments for dairy farming	32065	1.3	22265	69.4	2.5	9800	30.6	0.6
2.5 Partial reimbursement of interest on short-term credits (loans) used for the development of animal production, processing and marketing of animal produce	84683	3.5	65225	77.0	7.2	19458	23.0	1.3
2.6 Partial reimbursement of interest on short-term credits (loans) used for the development of crop production, processing and marketing of crop produce	145207	5.9	115207	79.3	12.7	30000	20.7	2.0
2.7 Partial reimbursement of interest on short-term credits (loans) used for development of dairy cattle breeding	1484	0.1	1103	74.3	0.1	381	25.7	0.0
2.8 Partial reimbursement of interest on short-term credits (loans) used for processing of crop and animal produce	20877	0.9	15716	75.3	1.7	5160	24.7	0.3
2.9 Partial reimbursement of interest on long-term, middle-term and short-term credits (loans) taken by small forms of agricultural producers	63641	2.6	53641	84.3	5.9	10000	15.7	0.7
Direction 3: State support to animal husbandry	***1034553***	***42.5***	***84426***	***8.2***	***9.3***	***950128***	***91.8***	***62.3***
3.1 Development of dairy farming	666702	27.4	60702	9.1	6.7	606000	90.9	39.7
3.2 Support to animal breeding	257503	10.6	21203	8.2	2.3	236300	91.8	15.5

3.3 Support to pedigree beef cattle	110349	4.5	2521	2.3	0.3	107828	97.7	7.1
3.4 Partial reimbursement of expenditures on increasing the livestock of reindeer, red deer and meat horses	-	-	-	-	-	-	-	-
3.5 Partial reimbursement of expenditures on increasing of female goats and sheep	-	-	-	-	-	-	-	-
3.6 Support to production and marketing of wool	-	-	-	-	-	-	-	-
Direction 4: State support to crop production	***90840***	***3.7***	***8260***	***9.1***	***0.9***	***82580***	***90.9***	***5.4***
4.1 Partial reimbursement of expenditures on planting and management of vineyards	-	-	-	-	-	-	-	-
4.2 Partial reimbursement of expenditures on purchase of seeds, taking into account their delivery to the Far Northern regions and territories equivalent to them	-	-	-	-	-	-	-	-
4.3 Partial reimbursement of expenditures on purchase of elite seeds	90840	3.7	8260	9.1	0.9	82580	90.9	5.4
4.4 Partial reimbursement of expenditures on planting and management of perennial fruit and berry gardens	-	-	-	-	-	-	-	-
4.5 Partial reimbursement of expenditures on eliminating old fruit gardens and improvement of land	-	-	-	-	-	-	-	-
4.6 Crop production on low productive land of far North and territories equivalent to it	-	-	-	-	-	-	-	-
Direction 5: Decoupled support to crop production	***477290***	***19.6***	***334103***	***70.0***	***36.9***	***143187***	***30.0***	***9.4***
5.1 Decoupled support to crop production	477290	19.6	334103	70.0	36.9	143187	30.0	9.4
Direction 6: State support to small forms of agricultural producers	***10694***	***0.4***	***4986***	***46.6***	***0.5***	***5708***	***53.4***	***0.4***
6.1 Partial reimbursement of expenditures of family farms, including individual entrepreneurs, related to privatization of agricultural land	1511	0.1	190	12.6	0.0	1321	87.4	0.1
6.2 Development of family animal farms	-	-	-	-	-	-	-	-
6.3 Support to starting farmers	9183	0.3	4796	52.2	0.5	4387	47.8	0.3
6.4 Grants to agricultural consumer cooperatives for infrastructure development	-	-	-	-	-	-	-	-
Direction 7: State support to regional programs of economic importance	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
7.1 State support to regional programs of economic importance in the field of meat farming	-	-	-	-	-	-	-	-
7.2 State support to regional programs of economic importance in the field of crop production	-	-	-	-	-	-	-	-
7.3 State support to regional programs of economic importance in the field of animal husbandry	-	-	-	-	-	-	-	-
Direction 8: Technical and technological modernization, innovative development	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
8.1 Subsidies to producers of agricultural machinery	-	-	-	-	-	-	-	-
8.2 Grants to implementation of promising innovation projects in agriculture	-	-	-	-	-	-	-	-

8.3 Partial reimbursement of expenditures on foundation and modernization of agricultural establishments	-	-	-	-	-	-	-	-
Direction 9: Federal targeted program "Sustainable Rural Development for 2014-2020 and the period till 2020"	***298530***	***12.3***	***87390***	***29.3***	***9.6***	***211140***	***70.7***	***13.8***
9.1 Housing subsidies to rural citizen, including young families and young professionals	298530	12.3	87390	29.3	9.6	211140	70.7	13.8
9.2 Grant to the development of social and engineering infrastructure in rural settlements, construction and reconstruction of roads	-	-	-	-	-	-	-	-
9.3 Grants to support local initiative of rural citizen	-	-	-	-	-	-	-	-
Direction 10: Federal targeted program "Restoration of Agricultural Land for 2014-2020"	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
10.1 Grants to construct, reconstruct and modernize land irrigation and drainage systems for public and individual use, as well as separate hydrotechnical construction s belonging to agricultural producers	-	-	-	-	-	-	-	-
10.2 Grants to privatize ownerless irrigation and drainage systems and hydrotechnical constructions, excluding judicial fees	-	-	-	-	-	-	-	-
10.3 Grants to implement agroforestry measures	-	-	-	-	-	-	-	-
10.4 Grants to implement land clearance operations	-	-	-	-	-	-	-	-
Total funding	**2432533**	**100**	**907290**	**37.3**	**100**	**1525243**	**62.7**	**100**

[1] Share of the overall funding
[2] Share of funding from the federal budget
[3] Share of funding from the provincial budget

Source: Ministry of Agriculture of Russian Federation, Information directory on the amount and allocation of state support to agriculture in Russian Federation (as on 24.09.2015). Accessed at http://www.gp.specagro.ru/region/5356/2/16/10/2015 on 19.10.2015.