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Agrarian question and sustainable development of Polish agriculture

Józef Stanisław Zegar

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THE POLISH AND THE EU AGRICULTURES 2020+
CHALLENGES, CHANCES, THREATS, PROPOSALS

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Introduction

The agrarian question is a very complex theoretical problem with extensive practical consequences caused by various ways of solving it. The question was introduced in the social discourse at the end of the 19th century and is still present in both economically less developed and highly developed countries. The former with the social structure dominated by ploughmen and herdsmen are facing the need for solving the problem, while the latter made, indeed, considerable progress in solving it by industrial means, but such a path is increasingly undermined given new challenges and conditions of civilisation development. It is about ecological (environmental) challenges, a new concept of food safety, a new situation of capital circulating around the world in search of favourable allocation, a new situation of labour force and effects of globalisation phenomena. Poland is somewhat in between, following the path of agricultural industrialisation, but the awareness of related risks is increasing at the same time.

The classic agrarian question was not clearly defined and, in fact, it was not *explicite* defined at all. There is even no unanimity on its naming – apart from the term "agrarian question", the terms "agricultural question" and "peasant question" are used as well. Their interpretations and scopes are also different. The term "agrarian question" will be used hereinafter – assuming that it covers the other terms which are narrower. One may think that failure to define the agrarian question is due to the presence of its various actors, in particular capitalists, peasants and politicians. Each of them picked out own priorities from among topics covered by the term "agrarian question". As a matter of fact, their interests differed. Nowadays, the classic concept of the agrarian question is modified by taking into account contemporary developmental challenges and conditions, while emphasising environmental and socio-cultural aspects.

Poland is making up the ground it has lost long time ago in terms of solving the agrarian question, following the path set by the agriculture of highly economically developed Western European countries. The path involves the industrialisation of agriculture and a shift from peasant holdings to farmers' holdings and agricultural enterprises. The underdevelopment of agriculture in Poland was revealed as early as in the late Middle Ages and intensified significantly during the partitions[1]. Regaining independence and bringing together different legal, administrative and economic systems, the devastation of war, effects of the Great Depression of the 1930s, no radical agrarian reform and slowly developing non-agricultural sectors did not reduce this backwardness in the interwar

[1] In 1795, Poland lost its independence – being partitioned between Russia, Prussia and Austria – and regained it in 1918.

period (i.e. 1918-1939). The devastation of World War II, border demarcation and the imposition of the socialist system by the USSR inhibited the transformation of agriculture and increased its underdevelopment once again. The political transformation in the last decade of the 20th century sacrificed agriculture for the sake of political changes and thus it could not speed up the development of agriculture, but quite the opposite – inhibited it, although creating a legal and organisational framework for its transformation. However, accession to the European Union provided a significant boost to the industrial transformation of agriculture primarily due to transfers stemming from mechanisms of the Common Agricultural Policy (CAP). The industrialisation of agriculture with increasingly important farmers' holdings and agricultural enterprises is thus taking place in parallel with the persisting dominance of small peasant holdings with poor opportunities for industrial development. Nevertheless, transformations of agriculture are speeded up by internal forces of agriculture as well as by external conditions. It is undoubtedly conducive to solving the agrarian question, but the problem arises whether it is equally conductive to sustainability? The problem is important, because Poland, just like the European Union and many other countries, took the course towards the sustainable development of agriculture. Such development demands that the agrarian question be solved. However, the relationship between solving the agrarian question and achieving sustainable development is complex. The industrialisation of agriculture leading to increased productivity, effectiveness and competitiveness usually results in increased environmental pressure. This pressure can be mitigated and even halted by the sustainable intensification of agriculture, especially by agro-ecological means. An important aspect is that the weakening position of agriculture in the socio-economic structure undermines rural viability.

Experiences in solving the agrarian question by industrial means, and contemporary development challenges and conditions require that strategies for further agricultural development be rethought. These experiences reveal the need for seeking solutions bringing the sustainability of this system to a higher level by holistic agricultural transformation to achieve synergies. It is about seeking the optimum interaction of motor forces of transformation: technology (innovation), social and human capital, the market and politics. These experiences also reveal the achievement of a ceiling in the process of industrialisation and the revaluation of the natural and socio-cultural factor. This makes Polish agriculture (and the agri-food system in general) face the choice: to chase the West around a curve or straight ahead, but also invites us to reflect on the purposefulness of this chase. Polish agriculture is at a crossroads, the more evident, the more increasingly the intensifying environmental, economic and social condi-

tions of sustainable development are taken into account. At the same time, growing controversy over the model of industrial agriculture and the course taken towards sustainability call for considering how the problem will be solved in the years to come. On the one hand, forces of a globalising market make agriculture follow the industrial path, but – on the other hand – common sense requires that political actions be taken to make the model of sustainable agriculture come true. This choice is crucial to the agrarian question.

Agricultural choices, in particular those related to the agrarian question and sustainability, are significantly influenced by globalisation phenomena. Globalisation leaders, i.e. global corporations, prioritise a short-term economic benefit – and there is no other way, because this is what their managers, who are assessed based on the benefit, care about. Agriculture generally generates a smaller economic benefit compared to other sectors of the economy. This rule is reinforced by globalisation, while agriculture is marginalised – in rural areas as well. Agriculture in regions with less favourable natural and socio-economic conditions declines which often leads to their degradation. Globalisation brings benefits to large transnational corporations, but destroys farmers – primarily family holdings. The imperative of reorienting agriculture towards sustainability changes the way opportunities for solving the agrarian question through industrial transformation are perceived. In particular, family holdings hold a dominant position in the concept of socially sustainable development of agriculture which may seem to be a too risky thesis given experiences of highly developed countries and to-date transformations of agriculture in Poland. Their dominance in the socio-economic structure of agriculture seems to be crucial, as such agriculture can meet basic social objectives immanently embedded in the concept of sustainable development of agriculture in the foreseeable future. Anyway, it is what the so-called European model of agriculture provides for. In turn, globalisation challenges this model – by speeding up the industrialisation of agriculture, encouraging migration from agriculture, the acquisition of agricultural land by construction, infrastructure, services and forestry.

✶

The paper covers only the dominant sector of agriculture in Poland, i.e. family agriculture interchangeably referred to as “peasant”, “individual” or “non-socialised agriculture”. The sector of great estate agriculture: landowning and socialised agriculture (state holdings and agricultural cooperatives and now legal personality holdings), was disregarded.

There is no strict distinction between forms of peasant and family agriculture. It is generally accepted that a peasant holding is a form of family agricultural holding with certain features: self-employment, orientation towards subsistence and survival, towards income, not profit, towards peasant family reproduction and a specific system of values. Basic attributes of peasants are as follows: 1) possessing land on which a farmer works with his family, 2) running a holding according to non-market rules, 3) land, a family and a holding as dominant values in the system[2]. As regards non-peasant forms of family agriculture, however, holdings are oriented towards commodity production. It is assumed that a market-oriented holding (so-called commodity holding), even though being family-owned, is no longer a peasant holding [Ellis 1993]. Such holdings need to be treated as a farmer's holding, but only when an input of family labour is dominant (and when it is the primary source of livelihood for a family). Nevertheless, if an input of employed labour is dominant, a farmer's holding becomes an agricultural enterprise. However, their demarcation line is not clear and such or another orientation of agricultural holdings is connected with general socio-economic development – exogenous conditions for the development and functioning of agricultural holdings. The terms "peasant holding" and "family holding" will be used interchangeably in the paper, as is commonly the case. More specifically, the term "family holding" is wider, since it covers various forms of family holdings: peasant holdings, market (farmers') holdings and family agricultural enterprises [Zegar 2009].

The paper is divided into four chapters. The first chapter deals with the perception of the agrarian question itself and presents views of Polish economists. The second chapter outlines key topics covered by the agrarian question in the history of Polish agriculture, in particular in the last century, i.e. after Poland regained its independence. The third chapter is devoted to transformations of family agriculture in Poland in relation to the agrarian question. The fourth chapter attempts to find a place of family holdings in the concept of sustainable development of agriculture. The paper ends with a brief conclusion.

Due to the vast domestic and foreign literature as well as the widespread availability of the Internet, the used references were limited. The same applies to statistical sources which, if provided in relation to time series, would take much effort and space. Therefore, only specific statistical items were presented – apart from series and annual publications (statistical yearbooks).

[2] Another attribute of a peasant (family) holding is its transfer to a successor [Vliet et al., 2015], but it only applies to holdings with such a successor.

I

CLASSIC AND CONTEMPORARY CONCEPT OF THE AGRARIAN QUESTION

1. Classic approach to the agrarian question

The agrarian question in its classic sense emerged as a result of the development of capitalism which, to keep developing, required agriculture to be transformed so as to provide – apart from raw materials – cheap labour to capitalist enterprises and cheap food to industrial workers and other urban dwellers. The point is that labour is essential for creating the value added (increasing capital), while cheap food makes it possible to increase employment at relatively small labour (remuneration) costs which translates directly into increased profit (capital). Nevertheless, labour and land productivity in pre-industrial agriculture were low, thus making the supply of labour and food insufficient. It was therefore in the interest of capital to release labour force from agriculture – first, by granting the freehold title to peasants, then by land mechanisation and concentration – and increase land productivity by using chemical fertilisers and new plant varieties and animal breeds. It could only be done under conditions of the incorporation of agriculture, more specifically peasant agriculture, into the orbit of the market and operating rules of the capitalist economy – the transformation of agriculture from its traditional, autarkic form to a new form of proper capitalist system formation. It was thus necessary to encourage peasants' economic motivation, commercialise agricultural production and trigger the imperative of accumulation (growth) which, in turn, triggered a technological treadmill leading to other agricultural industrialisation processes: concentration, specialisation and intensification. These processes were basic components of agricultural transformation which led to the development of certain holdings according to the standard industrial model and the fall of others. However, peasants themselves, who were mostly stuck with their small holdings, kept living in poverty, some of them joined an army of workers or the proletariat and only a small fraction earned satisfactory income from their agricultural holdings.

The market became a driver for transformation as a mechanism for selection, allocation and a supply stimulator which, however, led to abolishing the then social system of agriculture – the system based on peasant holdings and the peasantry – which dominated respectively national economies and societies at that time. The situation was odd as peasants had to take part in the great process of transformation of agriculture into a system which undermined their entire legacy of the past and threatened the very existence of peasants as a specific

community. The agrarian question thus emerged. Its central problem was transformation (transition) from feudalism to capitalism – from one model of socio-economic relations to another one. In fact, it was about the transformation of two pre-capitalist social formations – feudal lords and peasants – to new formations – capitalists and workers. Feudal production relations were replaced with capitalist relations which was a huge leap in the development of agricultural production capacity. Capitalist ownership replaced land ownership. Classics of the agrarian question justified this transition with the leading role of industry in the capitalist stage of socio-economic development[3]. Industry was undoubtedly a driver for the development of the capitalist economy and transformations of agriculture. Interdependencies in the transformation of the economy – agriculture and industry – during transition from feudalism to capitalism is described by the paradigm of structural transformation formulated by W. Lewis [Lewis 1954][4]. Benefits for agriculture stemmed from an arithmetical calculation that there were fewer people to be maintained in agriculture and migrants often financially supported those who remained in that sector (but also agricultural families provided migrants with food products). Migrations from agriculture are considered as a way to solve the problem of labour surplus and to improve the income situation in agriculture. Agriculture provides labour force to industry and start-up funds (primary accumulation) as well as cheap food, while industry provides agriculture with means of production to increase yields and agricultural productivity in general. All in all, it brings multiplier effects to the national economy: higher labour productivity, income – thus well-being, and lower poverty. This path leads to reducing the share of agriculture in employment and value added creation to 2-3%, while equalising labour productivity in agriculture and industry.

It was in the interest of capital to replace feudal lords with the bourgeoisie, peasant holdings with agricultural enterprises (small estate with great estate)

[3] K. Marx said: *Great agricultural industry is most revolutionary in the sense that it destroys a backbone of former society – "peasants", and replaces them with an employed worker (...). The economy most encrusted with traditions and most irrational is replaced with the deliberate use of technological knowledge* [Marks 1970, p. 565]. K. Kautsky was of a similar opinion: *However, industry is a decisive sector of production in capitalist society and the well-being of all mankind depends much more on the state of industry than on the state of agriculture. Capitalist society can sacrifice agriculture for the sake of industry without detriment to its well-being, as exemplified by England* [Kautsky 1958, p. 433].

[4] This model includes two sectors (underdeveloped agriculture and modern industry) and is based on the following assumptions: 1) there are surpluses of zero-productivity labour force in agriculture, 2) non-agricultural employment of this labour force is higher (*implicite* made possible by higher labour productivity), 3) the shift of labour force from agriculture to industry does not result in lower agricultural production.

and peasants with proletarians transformed as far as possible into employed workers in the service of capital (creating the value added), and a certain fraction of peasants transformed into agricultural entrepreneurs (farmers). In order to maximise economic surplus taken over by capitalists (remuneration for employed capital), it was desirable to minimise remunerations (wages) of employed workers only to the extent necessary for existence and labour force reproduction. It is most easily achieved by cheap food on which households spent much of their income at that time. Thus, capital required agriculture to increase the volume of food production (for workers and urban dwellers), more specifically cheap food production. Both of these objectives required the modernisation of agriculture – triggering a technological and capitalist treadmill. There was also the need for the so-called primary capital accumulation – to raise funds for the take-off of industrial development and overall economic growth.

Pursuing the interest of capital, however, raised problems for peasants. It is primarily about their deprivation, fragmentation, economic and social separation from other social groups and difficulties in using labour resources of agricultural families. A large part of peasants reached a dead end: they could not develop their holdings, since they had no opportunities for doing so and they could not leave their holdings to emigrate, because they had no employment opportunities. It is the core of the peasant problem[5]. Moreover, the political doctrine provided for the disappearance of peasants as an independent social layer in both capitalism and socialism.

The agrarian question is multidimensional – it is not scalable, it has many manifestations varying between phases, stages of development, points of view – perspectives. The problem has not had a strict definition so far which probably is due to different approaches to the transformation of peasant agriculture. In fact, the superior system has other priorities than peasant holdings and families. These systems have simply different interests. In both cases, the subject matter of the agrarian question – the material subject to overview, analysis, assessment and actions – is the peasant economy, more specifically peasant holdings and families. The former is about getting cheap food and cheap labour force, while the latter – about the reproduction of a family and an agricultural holding.

According to capitalists (bourgeoisie), the classic agrarian question was about transforming agriculture so as to create a sufficient supply of cheap labour force and cheap food. However, peasants considered this question as a compulsion to industrialise agriculture, problems in earning satisfactory income, the use

[5] *The peasant question (...) is about a compulsion to remain a peasant, although it is impossible to develop economically and socially to meet aspirations justified in a specific time* [Miazek and Szymański 1990, p. 42].

of family labour force resources as well as the increasing diversification of peasant holdings and their transformation into farmers' holdings, dual-occupation holdings or the liquidation of agricultural holdings in general. In turn, feudal lords (landowners) considered the agrarian question as the loss of serf labour force and the necessity for transforming landowning agricultural holdings into capitalist agricultural enterprises or their liquidation (sale, lease).

In Poland, the agrarian question in its classic form was addressed by Ludwik Krzywicki – describing the agricultural revolution (transformation) from the second half of the 19th century. By describing the development of capitalism and its market mechanism as forces exogenous to agriculture, he made it clear that agricultural transformations adjusting agricultural holdings to market requirements were inevitable. L. Krzywicki believed that the development of large capitalist agricultural holdings open to scientific and technical progress and meeting market requirements was the most effective way to solve the agricultural question. However, the peasant question emerged as a result of the deterioration of the peasant situation by the development of capitalism in rural areas. He justified the source of the question as follows: *along with rural impacts exerted by urban industrialism, the exploitation of peasants by these foreign – to them – social powers increases. Instead of a former feudal lord, the whole army of leeches appears, starting with a briber and a moneylender and ending with elevator companies, banks and sugar factories. All these figures and organisations subjugate peasants, and the higher the exploitation, the higher the indebtedness and still meanness and distrust of the rural population* [Krzywicki 1967, p. 309]. The commercialisation – marketisation – of peasant holdings itself together with land fragmentation due to a continuous increase in the rural population made peasants dependent on the market (money) rather than on feudal lords (serfdom). Forced to get money, peasants were often snared and exploited by moneylenders, they fell into the trap of indebtedness and misery, becoming a layer excluded from civilisation development.

L. Krzywicki was a strong proponent of the agricultural concentration of large holdings and the disappearance of small peasant holdings due to the technical and economic advantage of the former. While appreciating some advantages of small holdings as regards horticultural crops which are labour-intensive and require a tailored approach, however, he generally saw no future for small holdings, accusing peasants of ignorance and of holding back progress.

Władysław Grabski – the second prominent figure in terms of the agrarian question in Poland – had a much better opinion on peasants and opportunities for the development of peasant holdings than L. Krzywicki. He strongly criticised L. Krzywicki's concept of the agrarian question which condemned peas-

ants to extinction. Based on a statistical analysis of agriculture in the Kingdom of Poland[6], W. Grabski demonstrated that progress was made on both manorial farms and peasant holdings which, in dynamic terms, did better than manorial farms in their competitive struggle for existence – justifying it with a high symbiosis with a work environment [Grabski 1930, p. 14]. W. Grabski advocated modernising agriculture in the direct production (manufacturing), supporting and social sphere, and exploiting opportunities offered by the objective market. In order to derive benefits therefrom, small farmers should establish their own organisations (companies, agricultural circles, agricultural societies). W. Grabski advocated speeding up structural changes in peasant agriculture – also by reforming agriculture (parcelling of large estates) – establishing farmers' holdings (capable of market competition); however, he considered small and medium-sized holdings as a driver for the development of agriculture and the economy as a whole, and a chance for improving the lot of peasants. He believed that the performance of the peasant economy could be improved by increasing knowledge – knowledge of agricultural economics and accounting – land reclamation, integration, agricultural associations, companies and agricultural circles (to better function on the market), agricultural credits granted by municipal funds. According to W. Grabski, a huge problem of rural areas was agrarian overpopulation which caused land fragmentation. The parcelling of estates could serve as a countermeasure only to some extent. He believed that permanent emigration and industrialisation were the two main ways in this regard, considering the former as fundamental [Grabski 2019, p. 105].

The Social Democracy of the Kingdom of Poland and Lithuania (SDKPiL) saw only one way of development of capitalism in rural areas, i.e. the *transformation of large semi-serf latifundia into large capitalist manorial farms*. Its leaders (R. Luksemburg and J. Marchlewski) did not consider the peasantry as an ally in their struggle for a socialist revolution and opposed the agrarian reform through the parcelling of estates and the seizure of land by peasants, because *it had nothing to do with the socialist economy* [Fiedler 1933, p. 28]. They advocated transforming estates into agricultural cooperatives.

The agrarian question was obviously of strong interest to the people's movement, in particular a trend related to agrarianism. Proponents of agrarianism accepted the primacy of agriculture in the national economy based on viable family holdings which they regarded as a backbone of the agricultural system. It was emphasised by the leading agrarian theorist, Stanisław Miłkowski: *Accord-*

[6] Congress Poland (Kingdom of Poland) was created by the Congress of Vienna in 1815 from mainly the Russian part of partitioned Poland – connected by personal union with the Russian Empire – it *de facto* lost its autonomy following the fall of the November Uprising in 1831.

ing to agrarian principles, the agricultural system is based on an independent peasant holding [Miłkowski 1934, p. 50]. Agrarianism provided for: the superiority of the peasant family economy (over the farmer and capitalist economy)[7], the separation of peasant interests and, therefore, the need for a separate policy, the primacy of agriculture rather than of industry, the relationship between man and land, the primacy of the spiritual factor over the material factor. In certain respects, it was close to the social market economy. Proponents of agrarianism criticised competition as a fundamental regulator of economic life and pointed to the importance of nature and proper relations between the economy and nature. Agrarianism emphasised the solidarity of peasants – their cooperation as a group. S. Miłkowski pointed out that: *It derives its laws and rules from land, from cooperation between man and nature, from laws governing small-scale agricultural production, it is based entirely on man and wants him to become a creator of new life* [Miłkowski 1934, p. 42]. One can find many similarities between agrarianism and contemporary social movements, such as La Via Campesina, and ecological movements.

Similarly to W. Grabski, S. Miłkowski believed that the agrarian question may be solved through the agrarian reform, as he was convinced that the land productivity of peasant holdings is higher than that of manorial farms. It was an important, not to say key, argument in favour of the parcelling of land estates, a complementary social argument. The main agrarian reform dispute was the choice between two options, i.e. whether the parcelling of estates is to be voluntary or compulsory and whether any compensation for land is to be granted. S. Miłkowski advocated establishing independent family holdings – without any buy-out, because *withdrawing the freehold title to land and leaving its current owners without any compensation would only be fair compensation for ages of harm* [Miłkowski 1934, p. 51].

The ideology of proponents of agrarianism was reflected in a draft programme of the agricultural system of 1943 for upcoming Poland, entitled "Our common home", presented by an activist of the people's movement, Zygmunt Załęski. He fostered efficient family holdings of 10-15 ha, the parcelling of holdings of over 50 ha, except for holdings intended for serving general agricultural needs (e.g. plant breeding), but no more than 150 ha (as cited in: [Ignar

[7] With respect to the effects of scale (size) of holdings, proponents of agrarianism believed that: *the large-scale agricultural economy is cheaper, requires less capital per unit of area and allows for making better use of machinery, while the small-scale agricultural economy is, in fact, more expensive, but generates higher raw and social income, as the smaller the area per holding, the higher the income per unit of area. In fact, a peasant, for whom a certain area is the only work environment, can use it much better than a landowner who uses employed labour* [Miłkowski 1934, p. 56].

1986, pp. 157-158]). The programme also addressed dual land treatment as a private and common good at the same time: *Land is not intended only for possession. It must make its best to serve as a livelihood for people and, as a national good, may remain in the hands of those who know how to walk on it, who have proper preparation assessed primarily based on the performance of to-date farming* (as cited in: [Ignar 1986, p. 160]).

After World War II, the agrarian question was of interest to a small number of economists. Henryk Chołaj defined it as follows: *As an important component of the political economy theory, the agricultural question includes: relations of property and the use of means of production, in particular land which is a basic and indispensable means of agricultural production, social relations between people employed in this sphere of material production; the meaning of the term "agriculture", i.e. methods of soil cultivation and livestock breeding; relations of exchange within agriculture, and between agriculture and industry and other sectors of the national economy* [Chołaj 1970, p. 13]. Bolesław Strużek, in turn, defined the agrarian question as follows: *The agricultural question includes internal contradictions and opposites and laws of the economic development of particular types of production in agriculture. The development, scope and severity of these contradictions and opposites vary in the history. The most important opposites of the agricultural question are: class conflicts within the agricultural population, the opposite between urban and rural areas, between non-agricultural sectors of the economy and agriculture, property relations, in particular changes in land property relations, special features and laws of the economic development of agriculture in individual socio-economic systems, a class struggle of exploited layers of the agricultural population (slaves, coloni, feudal peasants, the agricultural proletariat, peasants as small-scale commodity producers) and the problem of class allies in this struggle* [Strużek 1964, p. 54]. Mieczysław Mieszczankowski considered the agrarian question as a socio-political problem which *is all about identifying the position of various social classes in relation to the layer (class) of minor landowners* [Mieszczankowski 1967, p. 49], while Adam Runowicz defined the agricultural (agrarian) question as *a set of problems originating from agriculture, whose solution affects the development of the national economy as a whole, in particular non-agricultural sectors* [Runowicz 1984b, p. 365]. A. Runowicz also distinguished the peasant question which involved *relative rural impoverishment and fragmentation as a result of which per capita peasant income is lagging more and more behind the income of other social layers and classes* [Runowicz 1984a, p. 365]. The agrarian question was defined broadly by Jerzy Wilkin: *The term "agrarian question" is used to denote a socio-economic situation in which agriculture and*

its problems become an element undermining the economic and social balance within a larger system which is the national economy or the world economy, or are a brake on socio-economic development because of their particular features [Wilkin 1986, pp. 13-14]. More briefly, J. Wilkin formulated the agrarian question as *a problem of agriculture's non-adjustment in terms of its structure and mechanism of functioning to a situation outside it* [Wilkin 1986, p. 14]. Furthermore, J. Wilkin distinguished the peasant question and defined it as *a problem of the peasant class's place and perspectives in the economy and society* [Wilkin 1986, p. 11]. In turn, Andrzej Czyżewski and Anna Matuszczak defined the agrarian question as *a set of problems arising in the process of reproduction in agriculture and originating from the specifics of agricultural production, whose solution affects the development of the national economy as a whole* [Czyżewski and Matuszczak 2011, p. 13].

A. Czyżewski and P. Kułyk defined the agricultural question more briefly as one of phenomena concerning: 1) transformation of agriculture from typical peasant structures through industrialisation towards new capitalist forms, 2) problem of hardly effective agricultural production and low capacity to generate economic surplus in the market mechanism; 3) capacity to accumulate capital and divide economic surplus flowing between agriculture and other segments of the national economy. They identify the agrarian question with a permanent crisis of agriculture and point to its multidimensionality and variation in time [Czyżewski and Kułyk 2015].

In broad terms, the agrarian question covers a wide range of issues relating to agriculture, peasants, relations between agriculture and other sectors, rural and urban areas, etc. The agrarian question is, in fact, identified with agricultural development and peasant problems, and relations between rural and urban areas as well as between agriculture and other sectors, agrarian overpopulation, etc. [Strużek 1964; Kwestia 2005; Czyżewski and Matuszczak 2011; Litwiniuk (ed.) 2016]. The agrarian question as such covers a wide and varied set of topics occurring throughout the history of agricultural development – from slavery (latifundia and small peasant holdings) through feudalism (manorial and peasant holdings) and capitalism (large-scale agricultural enterprises and family holdings). The agrarian question as such is timeless, has different forms and manifestations: *The agrarian question is constantly recurring, as it retains many specific features and it is hard to expect that it will change, although differences between agriculture and the rest of the economy are constantly narrowing* [Wilkin 1986, p. 352].

The agrarian question manifests itself in numerous symptoms, such as: (1) agricultural production growth lagging behind growth in the demand for agricul-

tural products; (2) lower labour productivity or lower productivity of other factors compared to the rest of the economy; (3) insufficient flexibility of agriculture in terms of both its production structure and manufacturing methods; (4) disparity of income and general social conditions; (5) significant social disparities and antagonisms both in the agricultural population and between the agricultural population and other social groups [Wilkin 1986, p. 14].

The classic way to solve the agrarian question in capitalism was to farmerise agriculture, while in socialism – to socialise it. J. Wilkin followed this thought and distinguished three ways of solving this problem: 1) collectivisation and nationalisation of agriculture (in socialist countries), 2) transformation of peasants into farmers, 3) capitalisation of agriculture and transformation of peasants into employed workers [Wilkin 1986, p. 13]. A. Runowicz believed that the agricultural question cannot be solved "at all" and once for all, since the development of agriculture only solves a certain form of the agrarian question, as it continues to recur in a new form – there is still a developmental distance [Runowicz 1979, p. 8]. According to A. Runowicz, capitalism has no solution to the peasant question, while socialisation offers an *ad hoc* solution, since *the agricultural question can be finally solved only after transforming food production into an industrial sector* [Runowicz 1979, p. 18]. Similarly, H. Chołaj believed that capitalism could solve the peasant question *neither by complete denial nor by replacing the peasantry with another class* [Chołaj 1966, p. 7]; however, the question will come to an end when significant differences between agriculture and industry as well as rural and urban areas will be overcome [Chołaj 1982, p. 34].

Recognising the importance of solving the agrarian question to overall development, J. Wilkin was rather optimistic about opportunities in this respect: *Every country has a chance to overcome the most aggravated manifestations of the agrarian question, in particular hunger. It is primarily because even the poorest country has two basic factors of agricultural production: land and people, which are found – on average – in relatively large abundance* [Wilkin 1986, p. 351]. Therefore, *Every country can find its own way to solve the agrarian question or at least its most bothersome manifestations* [Wilkin 1986, p. 35].

A. Czyżewski and P. Kułyk propose the holistic approach to solving the agrarian question by changing the paradigm of industrial development to socially sustainable development [Czyżewski and Kułyk 2015].

The agrarian question is all about obstacles, which are inherent in peasant agriculture, to economic development both within and outside agriculture [Byres 2012], as stated by the Polish scholars of this problem referred to above (agriculture as a brake on economic development or its non-adjustment to the "rest" of

the social economy). The problem as such seems to reflect interests of only one side – the superior system, and neglect interests and real capacities of peasants. It also neglects the entire complexity of intertwining developmental relations of agriculture and the "rest" of the social economy.

The underlying cause of the agrarian question lies in a conflict of interests which was found during the development of capitalism between capital (bourgeoisie) and peasants, or the superior system (national economy – general socio--economic development) and the agricultural system. Classics of the agrarian question assumed that it was inevitable to subordinate, adjust the agricultural system to requirements of the superior system – interests of peasants to interests of the bourgeoisie. Such inevitability was forced by mechanisms of the capitalist economy and by the State serving interests of capital. It is probably a basis for considering peasant agriculture's non-adjustment to the superior system as a source of the agrarian question. As regards Poland, it can be attributed primarily to an insufficient supply of food and a permanent disparity of income to the disadvantage of farmers. However, the supply of food covered the demand, which generally deviated from needs, and was determined primarily by the availability (supply) of industrial means of agricultural production. The underlying causes of the disparity of income, however, were low labour and land productivity. The former was determined by the non-agricultural labour market, while the latter – by the availability of industrial means of agricultural production. The development of non-agricultural sectors was not inhibited by lack of labour force, but rather lack of capital, while the underdevelopment of industry limited the supply of means of agricultural production and the demand for labour force. The following question thus arises: Was such agriculture non--adjusted to (a brake on) overall economic development or quite the opposite – did slow economic development inhibit the transformation of agriculture? At present, the following question arises: Is such inevitability categorical in view of new conditions? Should not one speak of symbiosis rather than subordination?

2. Contemporary approach to the agrarian question

Although it has been over one hundred years since Karl Kautsky brought the agrarian question into the social discourse, it is still of strong interest to many scholars and politicians. It is because of the divergence between the classic way of solving the agrarian question and the actual course of events as well as new challenges in and conditions of agricultural development. Although somewhat differently formulated than at the end of the 19th century, the question can be undoubtedly considered now as one of the most important social problems both in the world and in Poland.

The agrarian question is still present, because the process of capitalist agricultural transformation has not been completed yet. The classic agrarian question in developed countries gives old terms new meanings. A sufficient supply of food ("abundant and cheap food") is still important, but it is not only about its volume (calories), but also about the availability, quality and manufacturing of food products. The transformation of peasant holdings is not so much about establishing agricultural enterprises, but mostly farmers' holdings; however, the right of auxiliary (peasant) holdings to exist is recognised. Agricultural holdings are perceived not only as a production and economic system, but also as a complex agro-ecological system with multiple commercial and non-commercial functions. The solution to the agrarian question is not just about industrialisation (especially concentration), though countries are facing significant changes in the industrialisation of agriculture which have already started anyway. The problem in developing countries, which are facing the transformation of agriculture, is that they cannot copy – save in exceptional cases – the way of capitalist agricultural transformation by industrial means. Structural changes in developed countries were gradual, progressing in harmony with changes in culture and, importantly, under internal influences. At the moment, however, agriculture in developing countries is under great pressure from megatrends to introduce rapid changes in agricultural structures – to shift to the developed model of industrial agriculture, often leaving the dominant traditional sector aside. Liberalisation (deregulation of prices and trade) – rather than the agricultural reform as before – is considered as the main instrument for the transformation of agriculture in underdeveloped countries, i.e. unlike today's highly developed countries which used to close their markets, protect fledgling industry against competition, subsidise private business with public money and force weaker countries to introduce free trade[8]. Today's rich countries, when taking off to start structural transformation (growth), had a smaller population and a lower birth rate than today's developing countries and virtually unlimited opportunities for migration to colonies, while production technologies were more labour-intensive than today, meaning that industry might absorb more labour force [Bernstein, 2010]. It is facilitated by the dependence of many such countries on food aid and food import. It, however, causes huge social and ecological problems. In fact, the main benefits are derived by corporations, while costs, in particular environmental costs, are borne by local communities. Nevertheless, the way of solving the problem of food and generally agricultural development in developing countries will be fundamental to the future of human civilisation – to the preservation of

[8] Examples of South Korea, Japan and other East Asian tigers (protectionism of fledgling industries) justify deliberate state interventionism [Chang, 2016].

its natural habitat. The natural environment itself is a great challenge for all countries – regardless of their economic development level.

Governments of many developing countries continue to pursue developed countries' policy of cheap food from the era of industrialisation, while protecting their domestic industry. Consequently, agriculture is developing according to a dual model: on the one hand, capitalist (corporate) farms, which produce mostly for export (tropical and subtropical products, fodder, biomass for biofuel production) and for richer urban layers, are developing. They use cheap labour and often overexploit the natural environment. On the other hand, peasant holdings are subject to differentiation: some undergo proletarianisation (employed agricultural workers – labour force for capitalist farms, migration to urban areas), some – vegetation, some are strengthening and moving towards farmers' holdings. There are some countries in which labour migration abroad and within a country may strengthen peasant holdings (development-oriented transfers), may sustain existence (consumption-oriented transfers), but may also lead to weakening (loss of labour inputs) and even liquidation (no successor).

At present, the role of agriculture in the national economy goes beyond capitalism's contribution to migration and accumulation (supply of labour and capital) and agriculture's contribution to GDP, foreign trade or meeting the final demand [Johnston and Mellor, 1961]. Naturally, this contribution is still important, even very important – particularly in developing countries in which the agricultural sector has a positive and relatively large impact on economic growth, poverty, malnutrition and even hunger reduction. This impact is greater than suggested by statistics – taking into account an agricultural input into other sectors through which they take over economic surplus generated in agriculture. It is currently being strengthened by globalisation phenomena, including the diminishing role of food self-sufficiency and falling prices of agricultural products on world markets. Today's possible contribution include – apart from the one historically described, such as the supply of cheap agricultural products, labour force, land for non-agricultural purposes, value added creation – new important components related to the multifunctionality of agriculture in the field of environmental protection, rural development, cultural heritage protection. The size of this contribution depends on agricultural structures. The problem is that their impact on individual components is multidirectional.

Nowadays, new premises and conditions for the development of agriculture emerged which enabled taking a new look at the agrarian question. It is particularly about the crisis of capitalism, globalisation and a new paradigm of agriculture (cf. next subchapter – point 3).

Since the 1970s, capitalism has begun to enter a new stage subordinated to the neo-liberal ideology, i.e. "turbocapitalism" [Luttwak 2000]. Its main features formed the following triad: financial markets – corporations – the Washington Consensus. The Washington Consensus, which provided for development through the triad of liberalisation – deregulation – privatisation, collapsed; however, corporations are getting stronger, so are financial markets. Financial markets acquired a dominant position, they can even be said to impose a dictatorship (because these are states which are seeking capital inflows). The prevailing trend of the economic thought presents financial markets as something absolutely objective – in fact, the supreme good, regardless of their alienation from the social system and drive only for increasing capital. Financialisation makes the real economy replaced with the virtual economy – financial operations and speculation, trade in money and securities bring the biggest gains. Apart from trade in arms or drugs and the world of celebrities, this is where the highest profits are. Moreover, the world of finance – of trustworthy institutions in the past – started massively offering derivatives (ironically referred to as "products") which often resembled financial pyramids. The problem of the virtual economy is also its great potential for the destruction of the real economy. Financial markets slipped out of state control, thus making the economic system superior to the social system, all the more to ecological system with various – also negative – social, economic and environmental effects. Financial markets – financial capital – increasingly enter also agriculture and the agribusiness system as a whole, thus making food production subordinate to the logic of profit – a financial benefit [Russi 2013, pp. 39-40]. Subjecting agriculture to financial capital rules generally leads to its intensification, but may also lead to its extensification if capital is applied more profitable in other sector of economy. The following cause-effect chain is thus started: decreased production → increased prices → increased hunger and malnutrition → social resistance → ... and, above all, increased fluctuations in food prices and risk in general. As Vernon Smith – the 2002 Nobel Prize winner in economics – rightly noted, however: *Markets require subordination to social interaction and economic exchange principles by mutual consent*, while referring to David Hume's laws of nature (the law of stable possession, the law of possession transfer upon consent by a possessor and the law of compliance with promises) which form *a basis of order for the functioning of markets and the creation of well-being* [Smith 2014, p. 158].

At present, there is an exponential increase in views about the crisis of capitalism. The following reasons are listed, *inter alia*: obsession with growth, the imperative of accumulation, the cult of privatisation, growing inequalities, consumerism. Obsession with economic growth (GDP) is widespread – growth

is regarded as a panacea for solving all problems, regardless of environmental effects. The same applies to the imperative of accumulation which, in turn, forces consumption growth over current income which is made possible by credits – consumer indebtedness. The possibility of living on credit emerged as a result of the decoupling of the financial sphere from the real economy. Of course, this possibility is apparent and short-term, as living in real terms is based on already generated production, setting aside the depletion of natural resources. Immanuel Wallerstein justifies the collapse of the capitalist system with rising social and environmental costs of business[9], Rondall Collins – with the diminishing middle class – structural unemployment caused by information technology, while Craig Calhoun believes that reformed capitalism can survive, as it is not only the market economy, but also a political choice (e.g. Chinese capitalism). Markets can exist in the future even when a specific capitalist production or finance system collapses. Capitalism can survive, but it will no longer be a leader of global economic integration.

Globalisation sets new coordinates for the agrarian question, while creating conditions for corporations, integrated chains, technologies and institutions (NGOs, financial, insurance organisations, etc.), and environmental constraints. Driven by powerful forces, in particular transnational corporations, capital markets, consumerism and information technologies, and abolishing constraints on the free functioning of the market mechanism, globalisation stands in opposition to the need for the sustainable use of immobile land. Globalisation brings agricultural problems to the planetary level, giving them new dynamics and strongly influencing the agriculture of individual countries. On the one hand, the functioning of agriculture is increasingly determined by external forces and, on the other hand, the role of the political factor is being weakened, because economic globalisation lags behind political globalisation. The primacy of capital accumulation followed by large corporations in a globalised world is liberated from constraints imposed by nation states. Political institutions of states and regional integration groupings lose their scope to correct adverse effects of the global market. Above all, it applies to externalities and the protection of global common and public goods. The establishment of appropriate transnational democratic institutions proves extremely difficult. However, the need for shifting to the global economy – with new objectives, constraints and management – is increasingly recognised. Following the criterion of maximising the effectiveness of capital, corporations in a globalised world, on the one hand, increase the value

[9] The growing ecological crisis – the growing struggle for environmental resources and mass migrations – is an evident threat which may lead to totalitarianism and even nuclear wars [Wallerstein et al. 2013, pp. 1-8].

of the natural factor which determines opportunities for (upper ceiling of) biomass production and a set of possible products, but – on the other hand – they may lead to the overexploitation of this factor, as they do not follow the principle of sustainability (long-term benefit), but seek only a short-term benefit. Having exhausted the production capacity of a specific area, capital can easily move to another, more efficient area. The overexploitation of certain host ecosystems may marginalise other areas to the detriment of the environment and a local community. No mechanism has been developed so far at the planetary level to charge for negative externalities or reward for global public goods. However, the need for actions in the interest of global public goods is becoming ever more pressing. Corporations are more interested in creating book value, business value or dividends for shareholders rather than real economic value. Political institutions of the 21st century need to take responsibility for delivering public goods.

Based on the neo-liberal ideology, globalisation imposes solutions in favour of highly developed countries, in particular as regards access to cheap raw materials, new markets, favourable surplus capital allocation. Anti- and alter-globalists believe that these countries apply different principles than they applied during their own industrial development when they embraced the principle of protectionism. It turns out that agriculture is still important to capital – to capitalist accumulation – and was incorporated into the global system of production, trade and finance. It also applies to low-production holdings which are drawn into the orbit of capital and the imperative of profit. The process was facilitated by structural adjustment programmes of the World Bank and the International Monetary Fund, so was the development of the corporate food system – the dominance of capital over world agriculture – where malnutrition and overconsumption as well as production surplus and shortage occur at the same time [Akram-Lodhi and Kay 2010, p. 178].

What makes agriculture stand out is the relation of agricultural products with natural and climatic conditions which cannot be duplicated or imitated by competitors. The conditions are evaluated in this case based on the valorisation of agricultural production area – land capacity for high productivity with comparable capital and labour inputs. Labour productivity depends primarily on the ratio of agricultural land acreage to employed labour resources, i.e. using economic jargon – the land-labour ratio. In fact, it is nothing new. In addition to technical-labour and capital-labour ratios, the land-labour ratio determined the effectiveness and efficiency of agriculture, as indicated by differences in the industrialisation process between densely populated countries (low land-labour ratio) and sparsely populated countries (high land-labour ratio) [Herleman and Stamer 1963; Brandt and Otzen 2007]. At present, the land-labour ratio is in-

creasingly important due to negative externalities of intensive agricultural production methods. Countries with large *per capita* land resources or with larger-area holdings are, *ceteris paribus*, more competitive in relation to countries with smaller *per capita* agricultural land resources. In fact, deteriorating relations between agricultural intensification factor prices and ecological constraints make less intensive agriculture more advantageous. However, the labour cost is important, because allowing for a lower cost would improve competitiveness in relation to agriculture, in which this cost is higher, if it is not accompanied by higher labour productivity. The agricultural valorisation of the natural factor is also crucial to the economic efficiency of using capital by corporations which, following the economic criterion only, seek to equalise the marginal efficiency of its use. The mobility of capital eases constraints resulting from the immobility of land.

The theory of substitution of factors of production, including the substitution of land for capital, promoted during industrialisation and the closed economy, is no longer legitimate in a globalised world. The desire to use land by attracting capital under intensive competition conditions may, however, lead to social and ecological dumping which respectively involve lower social care and environmental standards. Costs of that dumping are borne, of course, by societies of countries which are forced to do so, however, benefits are enjoyed by capital providers – corporations. In fact, it is important to distinguish corporate competitiveness from state competitiveness. In the former case, competitiveness and microeconomic benefits depend on the amount of goods sold. In the latter case, however, competitiveness does not necessarily mean an increase in well-being (benefits), because increasing microeconomic competitiveness through social or ecological dumping is beneficial to corporations, while a specific country's benefit is doubtful.

Globalisation, which creates conditions for total competition, strengthens microeconomic criteria and weakens social criteria, thus preventing the internalisation of externalities. The problem is that there is no global market governing body at the global level [Szymański 2004; Rodrik 2011].

At present, the agrarian question covers the following contemporary universal problems, *inter alia*: high rural unemployment, unfavourable agricultural price scissors, the rigid demand for agricultural products, insufficient agricultural income and investment, material poverty as well as farmers' low activity, creativity and innovation [Czyżewski, Matuszczak 2011, p. 12], and income disparity, overproduction, but also the problem of small holdings and even the phenomenon of poverty among the agricultural population in highly developed countries, as well as low productivity and dependence on imports in less devel-

oped countries, and food safety at the global level, specifically *the problem of insufficient food production capacity in agriculture* [Wilkin 1986, p. 11].

Nowadays, opportunities for solving the agrarian question in both developed and developing countries must thus be looked for in the model of sustainable agriculture or even in its more sophisticated form – the model of socially sustainable agriculture [Woś and Zegar 2002]. Of course, the dominant model is concerned here, since different models of agriculture will coexist, as they do today, including the significantly modified model of industrial agriculture improved by scientific and technical progress. The following may thus be expected: more organic agriculture and less chemical agriculture, more local crops for local production; shorter producer-consumer routes; higher agricultural employment; support for a local rural economy.

3. Environmental and social aspects of the agrarian question

Today's awareness of the natural environment as a common good of mankind is growing. Exceeding capacity limits of the biosphere (planetary meta-ecosystem) is one of key arguments for critics of the paradigm of growth. Paradoxically, today's record-high scientific progress revealed man's addiction to nature and increased human humility in it at the same time. The growing awareness of ecology is reflected in the development of ecological ethics which establishes rules for the use of the natural environment without compromising its value and the management of its resources in accordance with principles of ecosystem sustainability. A new paradigm of development should, therefore, take into account natural constraints [Rist 2015, p. 273], thus shedding a new light on the agrarian question and its solutions.

Sustainable development requires a broader understanding of the agrarian question – in particular going beyond the classic subordination of agricultural transformation to interests of capital and industry (classic paradigm of industrial transformation), bringing new strategic objectives for the natural environment (including for the preservation of ecosystems' capacity for delivering goods and services), food safety, farmers' economic interest (income) and contributing to rural viability. In general, it is about contributing to general social welfare. These objectives are important sustainable development objectives.

The depletion of non-renewable resources, which provide raw materials for further processing into agricultural products, will limit the volume of such products, although continuous progress can ensure effective substitutes for these raw materials. However, there is no certainty in this regard. Furthermore, the capacity of the natural environment to absorb (utilise) anthropogenic impacts has been exceeded, with biodiversity decline and climate change being a prominent example.

Consequently, it is clear that the ecosystem of the globe becomes a barrier to growth in terms of industrial technologies. Further economic growth will thus have to be achieved by using growing knowledge, innovation and biomass based on the use of solar energy. The imperative of environmental protection has become the greatest developmental challenge of the 21st century. It is especially true for water, soil, climate and biodiversity. Ever scarcer environmental resources are not adequately reflected in the market, precisely in prices. Moreover, certain elements of the natural system should remain beyond market influence. It applies in particular to common goods. Common sense suggests the need for the rational use of biosphere resources, but it is important at the same time to construe rationality in planetary (existential) terms, not in terms of microeconomics.

The industrial transformation of agriculture ensured that the growing demand for food was satisfied, i.e. ensured food security in the then sense, i.e. quantitative (caloric, energetic) sense. It was done by putting more and more new land into agricultural use and by increasing land productivity by making increasing use of industrial inputs and environmental resources. Over time, capacities for increasing food production this way began to deteriorate. Untouched area for agricultural use started diminishing, while the conversion of forests into cultivated land has its limits. Furthermore, urbanisation increased the demand for land for housing and industrial construction as well as infrastructure. Paradoxically, urban areas were generally located on fertile soil which then led to urban sprawl on similar land. Additionally, large agricultural land is degraded by water and wind erosion as well as salinity (irrigated land) and industrial activity. Higher agricultural production had, therefore, its enormous environmental cost (exploitation of non-renewable minerals, biodiversity decline, water degradation and resource depletion, climate change, etc.) and social cost (depopulation, culture and tradition). For these reasons, agriculture faced a huge new challenge: increase production and avoid higher environmental pressure [Zegar 2012]. However, there is something more. In fact, the concept of food safety changed as well. It now covers not only the quantitative coverage of the demand, but also the coverage of the demand in general (food for all rather than only for those who can afford it), higher food quality (safe food containing needed macro- and microelements) and the way of food production – environmentally- and ecosystem services-friendly, socially inclusive and sustainable. The corporate food system, which is driven by profit (short-term economic benefit) rather than food supply, does not guarantee meeting these conditions. Alternative food systems, in particular local ones, are therefore sought.

The larger the population and the higher the food supply, the higher the demand for food products. First of all, agricultural and food products cannot be

further wasted on such a scale. However, production growth is inevitable and land productivity is gaining importance when opportunities for increasing agricultural land acreage are limited. The conventional (industrial) model of agriculture increased land productivity and, to some extent, the productivity of other factors of production by increasing external inputs (industrial means of production) and environmental resources, thus facilitating solving the agrarian question. Appropriate agricultural technologies and practices were used to this end. Conventional intensification involved: 1) increasing yields per 1 ha, 2) increasing crop intensity (e.g. two types of yields), 3) changing the crop structure into more efficient one [Pretty et al. 2011, p. 7]. The Green Revolution of the 1960s and the 1970s also followed this trend and led to production growth even higher than demographic growth. Since then, however, the situation has changed – conventional intensification still has considerable potential in many developing countries, but it is generally no longer a solution to its ecological and social effects. A new paradigm and new radical actions are needed. It is particularly true for developing countries with a high demographic growth rate.

In fact, it is about new agricultural transformation which would tackle present challenges and conditions, would lead to sustainability and food safety. There is a consensus that land productivity should be increased through sustainable intensification. This intensification means higher productivity (production, income, better food quality) as a result of making more efficient use of inputs of all factors of production used and lower environmental pressure (preservation of ecosystem functions) and the preservation of the sustainable production base[10]. However, the way of such intensification is a matter in dispute. Two trends emerged in this respect, i.e.:

1) Further following the industrial path with higher production per unit of inputs. It is achieved by increasing the quantity (mass) of means of production, using current means of production in a new way and using new means of production [Zegar (ed.) 2017]. Priority is given to the continuation of the Green Revolution through gene innovation, to production scale-up and deeper specialisation. Such a path is metaphorically referred to as "business as usual". Proponents of such intensification disregard environmental and social constraints (treating them as barriers), claiming that environmental protection is facilitated by the concentration of production on land already used for agricultural purposes, thus leaving other areas to ecosystems, while the best technologies minimise the negative environmental impact. As regards social issues (inequalities, pov-

[10] The term "sustainable intensification" is defined differently by ecologists, business, social movements, farmers according to the place, situation, context [Tittonel 2014]; a comprehensive overview of views on this subject is provided in [Mockshell and Kamanda 2017].

erty), however, proponents of this path argue that benefits of higher productivity will allow for redistributing resulting benefits another way.
2) Agro-ecological path[11] – improving sustainability, while maintaining productivity and, at the same time, protecting natural resources and ecosystem services. In a broader sense, the path covers the entire agri-food system, while in a narrower sense – agriculture. The former provides for changes in the food system as a whole, the establishment of innovative and sustainable agricultural institutions, the creation of social and human capital, sustainable living conditions for agricultural families and the intensification of cooperation between farmers [The Montpellier Panel 2013; Franks 2014; Cook et al. 2015]. The sustainable intensification as such covers: productivity, economics (effectiveness), the environment, social welfare, human well-being and agro-innovation. The latter is primarily about technologies (means of production, agricultural practices). Ecological intensification is specific, as it provides for using what the agro-ecosystem has to offer. The system of organic agriculture is its particular form. Organic agriculture takes the holistic approach to increasing productivity which promotes the sustainability of agro-ecosystems, including biodiversity, biological cycles and soil biological activity [FAO 2015]. Benefits of organic agriculture relate primarily to a positive biodiversity impact and lower environmental pressure, health benefits of organic food (lower pesticide risk, higher antioxidant content, 50% higher omega-3 content in organic meat and milk [IPES-Food 2016, p. 40]), a positive impact on rural viability and culture. The problem, however, is that yields are about 20% lower than in conventional agriculture.

The agro-ecological approach can tackle the challenge of feeding the world. But agro-ecological technologies need to be embedded in local agri-food systems. The agro-ecological approach, which is based more on agriculture (also small-scale) rather than on agro-industrial corporations, protecting nature (organic, low-input, agro-forestry, multilateral agriculture), using knowledge-intensive technologies, better fits small holdings because of higher labour intensity and multilateral production. This approach seeks the balance between environmental and economic development requirements [Horlings, Marsden 2011, p. 445]. A new paradigm: the current one prioritises productivity over sustainability, while the new one treats sustainability in the strategy for sustainable development as its integral and equivalent element [Rockström et al. 2017].

[11] The concept of agro-ecological modernisation means: 1) applying ecology to design agro-ecosystem management; 2) taking the holistic systemic approach to the development of agriculture and the food economy based on traditional knowledge, alternative agriculture and lessons learnt from local food systems; 3) bringing together ecology, culture, economics and society for the preservation (sustainability) of agricultural production, the healthy environment and the viability of agricultural communities [Carolan 2012, p. 205].

II

AGRARIAN QUESTION IN THE HISTORY OF POLISH AGRICULTURE

1. Polish-Lithuanian Commonwealth and the partitions

The agrarian question has its roots in the emergence of peasant holdings as a result of the breakdown of the national system which took place in the territory of Poland in the 8th century. Since then until the 14th century, the ruling class (nobility, lords) and the peasant class (mainly serfs) were formed. The formation of state power contributed to the differentiation of rights and obligations in place when going to war under the command of a duke (king) and with a different contribution of families and people to warfare. In the mid-14th century, knights and senior clergy were granted jurisdictions[12] – endowed with land together with its population. A duke (king) granted land to knights, the Church (bishoprics, monasteries) and courtiers, but the beneficiaries were granted the right to use land (fief) in return for duties to their ruler (e.g. obligation of armed defence). In turn, peasants lost their independence and retained only their fief in exchange for levies (natural rent, cash rent) paid to feudal lords, the Church and their ruler. This is also when peasants themselves began to be differentiated by their status (free peasants – squires of their land, colonists, peasants who were granted land from their ruler under certain conditions, *glebae adscripti*, slaves – servants at their ruler's court and at his officials' manors, prisoners of war), while their economic differentiation took place actually a few centuries later – during capitalist transformation. Back in the days of feudal dismemberment (12th-14th centuries), feudal lords (knights) used the weakness of their rulers (dukes) and forced them to make fief lasting, hereditary and transferable.

The nobility were formed in the 13th century and the early 14th century out of old knight families and knights for merits of war irrespective of origin (*ex carta belli*) and for merits in civil service (*ex kmethone vel sculteto creati*). Peasants were under the rule of the nobility in terms of judicial and administrative authority, land duties and personal labour duties to their lord. Feudal lords (knights, nobility) systematically strengthened their position. In the 13th-15th centuries, feudal lords converted the right to use land (whose nominal owner was their king – duke) into the right of ownership.

Manorial farms began to develop in Poland in the 12th century, but their development was halted by lack of labour force and the limited demand for agri-

[12] A jurisdiction is *a privilege of releasing land properties together with their population from burdens and levies paid to a duke, and partly also from a ducal justice system* [Arnold et al. 1934, p. 7].

cultural products, in particular cereal, due to scarce and sparsely populated urban areas. The situation changed drastically when the demand for cereal exported to the Netherlands and England increased in the mid-15th century. It was the main driving force for the development of manorial farms and serfdom on an unprecedented scale. The use of peasant labour force on manorial farms was nothing new, but its scale was relatively smaller, as the holdings were then oriented towards meeting needs of manorial lords (nobles). The divergence of interests of peasants and nobles was not yet evident at that time. Peasants paid levies in kind to their lords and did their little serfdom. At the end of the Middle Ages, peasant holdings were relatively prosperous and produced surpluses which they marketed. A levy in kind was often replaced with rent in cash. The average peasant holding had own arable land to be ploughed during a year by using a pair of oxen and a plough (about 22 ha in the two-field system and about 16 ha in the three-field system). Ploughed yields (with ridges left unturned) were 3-4.5 q/ha. Having replaced slash-and-burn agriculture with the two-field system and technical progress, which started since the mid-13th century when a plough with an iron ploughshare and a mouldboard was put in use and when sickles and scythes started being used for grain harvest, yields increased to 6-7.5 q/ha [Jezierski and Leszczyńska, 1999, p. 25].

The development of manorial farms, which were also oriented towards the production of grain for export, was related to larger agricultural land and thus to higher labour inputs which were supplied mostly by peasants. It was the primary reason for the gradual spread of serfdom which reached its peak in the 17th and 18th centuries. Interests of peasants and lords started going separate ways and the situation of the former became dramatic, much worse than in the Middle Ages.

The export of cereal[13] stimulated the development of noble manorial farms, which began to develop more intensively based on their own holdings, no man's land, buyouts of village council offices and sometimes farmland clearances which involved the resettlement of peasants into less fertile or more distant land to increase a manorial farm's area and improve its layout. Manorial farms operated based on peasants' own serf labour (secondary serfdom) – making peasants attached to their land: *Peasants became simple landless workers in service of their lords, forced labour force deprived of all rights; they ceased to be members of the community who could claim their rights and they were de-*

[13] The export of cereal at the end of the 15th century was about 10 thousand lasts, in the mid-16th century – 25 thousand lasts, while in 1618 – reached its peak, i.e. 128 thousand lasts; at the end of the 17th century, it was about 36 thousand lasts (1 last – about 2.5 tonnes) [Arnold et al. 1934, p. 187].

graded to the status similar to that of former slaves... [Grabski 2004, p. 109]. These actions contributed to the degradation of peasants and their holdings. Peasants in the feudal system enjoyed only the right to use land (they did not enjoy the right of ownership) and lost it; only few groups of peasants – the so--called free peasants – retained their hereditary right to use land; however, nobles had practically an unlimited right to the land and livestock of most peasants. Free peasants' holdings with horses or oxen were subject to corvee serfdom, while small holdings (up to 4 ha) – to quitrent serfdom. Serfdom became the greatest burden of peasants in Poland in the 16th-18th centuries. Peasant holdings were also charged with rent (20-50 groszes per lan) and levies: usually 30 eggs, 2 capons, 2 pieces of cheese, 2 bushels of cereal as well as mushrooms and undergrowth, and a predial tithe paid to the Church [Jezierski and Leszczyńska 1999, p. 45].

Manorial farms varied in size: from 1 lan (16.7-17.5 ha) as regards minor nobles to several dozen lans as regards great estates; the Crown's average estate covered about 130-140 ha. In the 16th century, the noble estates accounted for about 60% of the Commonwealth, the church estates – for 25%, and the royal estates – for 15%.

Manorial farms played a significant role in the development of agro-technical progress, including: spreading the use of an iron riding plough, carts with an iron hub, iron harrows, forks and scythes of good quality (imported from Styria), the three-field system, and integrating rural land.

The social structure of the Commonwealth in the 18th century was as follows: serfs within noble estates – 39.8% (3.4 million), serfs within royal estates – 9.5% (840 thousand), serfs within church estates – 10.4% (921 thousand), economies – 2.2% (190 thousand), free peasants – 11.4% (1.0 million), the Jews – 10% (900 thousand), burgesses – 6% (500 thousand), nobles – 8% (725 thousand), clergy – 1% (50 thousand), the Armenians, the Old Believers and the Tartars – 2% (250 thousand) [Davies 1999]. Peasants thus accounted for over 73% of the total population[14].

The serfdom system did not provide incentives for increasing land productivity and farming efficiency, but facilitated the creation of latifundia. The problem is that magnate latifundia, which were based on peasant labour, just like noble manorial farms, were productively and economically ineffective, contributing to the fall of the First Republic (Polish-Lithuanian Common-

[14] Structure of peasants: free peasants (about 1 million), serfs within royal economies (about 190 thousand), serfs within royal starosties (840 thousand), serfs within clergy estates (860 thousand), serfs within hereditary noble estates (3.55 million) [Jezierski and Leszczyńska 1999, p. 74].

wealth). The agrarian question was thus brought to light in the form of the agricultural question – the production of a sufficient volume of agri-food products. At the same time, economic and socio-political manifestations of the agrarian question intensified. It was increasingly difficult to generate economic surplus on agricultural holdings because of burdens on peasants which were growing since the end of the Middle Ages until the partitions – at the beginning of the 19th century, peasants still gave 40-50% of their income away to nobles [Rutkowski 1938].

The peasant problem, which intensified along with the development of manorial farms, was addressed in the late 18th century by more prominent representatives of the landed gentry. Following Western European countries, the peasant question was expected to be solved primarily by granting the freehold title to peasants. However, it was necessary to wait for this phenomenon to become widespread for a few decades. The freehold title and accompanying agricultural reforms were the main determinant of agrarian transformations in the territory of Poland in the 19th century. Undoubtedly, it significantly changed conditions for the functioning and development of great estates – transition from free (serf) labour force to employed labour force, thus triggering the gradual transformation of feudal manorial farms into capitalist agricultural enterprises oriented towards profit. Very cheap and abundant labour force made it easier.

Transformation from feudal into capitalist agriculture, for which a *sine qua non* condition was granting the freehold title to peasants, differed between partition zones, thus deepening the diversification of agriculture between the partition zones which then made the solution of the agrarian question after regaining independence more complicated. Serfdom was first abolished in the Prussian partition zone (royal edict of 1807)[15], thus triggering the process of granting the freehold title which was completed in 1850 by virtue of an act abolishing rights in respect of land supremacy without compensation and serfdom for compensation – the freehold title was granted to all peasant holdings. In the Grand Duchy of Posen in 1854, 55.4% of farmland was owned by great landowners. The average area of land estates was about 760 ha; over 4/5 of free peasants' holdings covered about 20 ha, while small-sized holdings of 4.5 ha on average accounted for 18.6% [Jezierski and Leszczyńska 1999, p. 140]. The phenomenon in the Prussian partition zone was that holdings had to be large enough to have the freehold title granted to separate peasant land from manorial land and to eliminate the chessboard layout of land. We can bear witness to its

[15] Hereditary peasants were granted the freehold title to lands and buildings and, at the same time, lost their pastoral and forest easements; rent for abolished duties was replaced with land tax and the remainder was subject to buyout).

positive effects even today. In Galicia and the Kingdom of Poland, however, small (dwarf) holdings were generally created with the cumbersome and absurd chessboard layout of land [Jastrzębski 2016, p. 19].

In the Austrian partition zone (Galicia), serfdom duties were abolished in 1848 by transforming fief into freehold; the burden of compensation was imposed on peasants. The freehold title was granted to 546 thousand holdings – generally small ones of less than 6 ha; compensation was paid in securities and funds for their buyout were derived from an indemnity supplement to the tax – i.e. peasants, who were granted the freehold title, and other taxpayers paid compensation to landowners for 30 years. Great landowners retained 27% of arable land, over 90% of forests and nearly 23% of meadows, pastures and gardens. In 1850-1902, peasants' land increased by about 11% which was generally thanks to money they earned during emigration. In 1912, great estates covered 2 695 thousand ha (public – 526 thousand ha, private – 2 169 thousand ha), while peasant estates – 5 154 thousand ha [Wojtas 1992, p. 45]. The socio-economic structure of agriculture in Galicia comprised different types of agricultural holdings, namely: 1) great estates where an entrepreneur is only a manager; 2) large peasant holdings where an entrepreneur is mostly a manager who must mainly rely on employed labour despite his family working on a constant basis; 3) small peasant holdings where an entrepreneur and his family are the only workers; 4) parcel (dwarf, cottage) holdings where there was not enough work for the whole family or to earn a living [Bujak 1908, p. 246].

In the Russian partition zone, peasants started being granted the freehold title in 1807 (abolition of serfdom and the equality of all citizens before law), while the right to land was granted to peasants by virtue of an ukase of czar Nicholas I of 1846 which strengthened rights of peasants to use land (farmland clearances prohibited), but it covered only peasants who had over 3 morgens (1.7 ha) of land. Following the ukase, holdings not covered by the prohibition of farmland clearances were increasingly liquidated – in 1846-1864, peasants lost 276 thousand morgens, i.e. 6.5% of their land [Wojtas 1992, p. 46]. Farmland clearings, which took place in the Kingdom of Poland when establishing manorial farms for farm workers, led to an increase in the landless population that got employed on manorial farms or sought seasonal and casual jobs. A freehold ukase of czar Alexander II of 1864 released peasants from duties by granting them the freehold title to their land together with buildings and stock without any payment, except for only a nominal tax rate. The ukase introduced an increased land tax rate, which was hidden payment for land, intended for the indemnity fund from which landowners were compensated for abolished duties (about half of the due amount). In practice, the landless were not allowed to own

land. As regards majorat estates[16] as well, the issue of transferring land to landless tenants and farm workers was left to estate owners. The ukase of 1864 provided that: 1) peasants shall become owners of land they possess; 2) peasants shall be released from any duties in favour of their squires, 3) squires shall be paid by the government. The reform covered 695 thousand holdings of 4.9 million ha in total; the landless were granted 1.1 million ha; manorial farms' land still accounted for nearly half of the Kingdom's land; peasants did not pay nobles for land, but they were charged with land tax. Having been granted the freehold title, peasants received about 4.1 million ha, while great landowners retained 5.9 million ha which accounted for about 46% of agricultural land [Wojtas 1992, p. 47].

Granting the freehold title to peasants in 1864 changed conditions for the functioning of both great estates (transition from serf to employed labour force) and peasant holdings (drawing into the orbit of the market). However, it did not significantly change the socio-economic structure of peasant holdings which was dominated by serfs with small holdings (of about 6 ha). Peasant holdings of up to 3 ha (34% of peasant holdings in total) were not able to maintain a family as opposed to larger holdings. The landless population accounted for 31% of the total rural population, including 10% of permanent manorial servants and 20% of the landless who engaged in seasonal jobs (1907). This population was at the very bottom of the social ladder – farm workers and landless tenants did not participate in elections of voits and mayors.

The economic situation of agriculture largely depended on demographic growth which was not accompanied by an adequate scale of development of non-agricultural sectors of the economy. The development of industry in Galicia and the Kingdom of Poland absorbed only a small share of the redundant rural population, thus contributing to the intensification of seasonal (mostly to Prussia) and permanent migration abroad (to America). Before World War I, 100--200 thousand people emigrated every year with no intention to come back and about half a million went abroad to Saxony [Grabski 1919, p. 71]. The process of drawing peasants into the orbit of the market began and led to the fragmentation of peasant holdings. Peasant holdings, which maintained the balance between production and consumption, were unable, however, to generate economic surplus necessary for the modernisation of holdings. *Per capita* agricultural production growth was insignificant – anyway, not enough to significantly improve food supply. In the late 19th century, it was accompanied by a decline in agricultural prices (import of agricultural produce from overseas countries) and

[16] Majorat estates were established after 1831 based on estates taken over from Poles to strengthen the Russian element in the partition zone.

an increase in taxes on agriculture in the Kingdom of Poland in relation to other lands of the Russian Empire. The Kingdom's market was flooded with cheap products from other lands of the Russian Empire. The economic situation of peasants was dramatic and, due to land scarcity, could be improved by only *increasing yields and animal production through more skilful labour, improvements, inputs, fertilisers, etc.* [Grabski 1910a, p. 108].

Agriculture in the partition zones differed significantly in the level and growth dynamics of crop yields (Table 1).

Table 1. Grain and potato yields in the partition zones (q/ha)

Crops	Kingdom of Poland			Galicia			Prussian partition zone		
	1878--1883	1909--1913	Change (%)	1880--1884	1909--1913	Change (%)	1878--1882	1909--1913	Change (%)
Wheat	9.4	12.4	132	9.1	11.7	129	11.2	21.6	193
Barley	8.7	11.5	132	8.0	11.2	140	10.1	20.9	207
Rye	8.1	10.8	133	7.2	11.3	157	8.0	17.0	213
Oat	7.0	9.5	136	6.4	10.7	167	8.9	19.4	218
Cereal in total	7.9	10.6	134	7.5	11.1	148	8.8	18.3	208
Potatoes	63	95	151	85	111	131	65	148	228

Source: [Jezierski and Leszczyńska 1999, p. 170, Table 6.4].

Land productivity (in standard units – SUs) was 13.2 in Galicia, 12.9 in the Kingdom of Poland and 24.2 in the Prussian partition zone. Differences in labour productivity (in standard units as well) were even greater: 11.4 in Galicia, 13.5 in the Kingdom of Poland and 33.2 in the Prussian partition zone [Kostrowicka 1978, p. 1294]. Land and labour productivity increased significantly throughout Europe, including in Poland. For instance, land productivity in the Kingdom of Poland in 1808/1810-1911/1913 increased from 3.14 SUs to 12.93 SUs/ha of UAA, while the share of plant and animal production (share of animal production was about 30%) remained practically unchanged with seasonal fluctuations, and labour productivity increased from 6.49 SUs to 13.55 SUs [Kostrowicka 1978, p. 1280, Table 1 and p. 1281, Table 2]. Land productivity thus increased 4.1-fold and labour productivity – 2.1-fold.

The lagging of agricultural productivity in the partition zones, with a different situation between the partition zones, can be considered as a determinant of Poland's lagging behind Western European countries at the turn of the 19th century in terms of the economic development of rural areas and agriculture. It was mainly due to the abolition of serfdom a few centuries too late[17]. In turn,

[17] Serfdom in England was abolished in the late 15th century, while in Poland at that time – intensified by the development of noble manorial farms based on peasant serfdom (transition from rents to levies in kind and labour) and this feudal dependence persisted until the 19th

overall economic underdevelopment led to large agrarian fragmentation, massive unemployment and dramatic poverty among peasants which, as a feedback loop, affected opportunities for industrial development, since poor peasants, which were the largest group, did not create the demand for industrial goods.

2. Second Republic

Having regained independence (1918), the Second Republic had to face huge socio-economic, political and institutional problems which largely determined manifestations of the agrarian question and possible actions to solve it. First of all, it is necessary to take into account the state encountered, determined by the legacy of the past and enormous war damage. This legacy in agriculture is primarily the fragmented agrarian structure (apart from most of the former Prussian partition zone), while outside agriculture – dramatically low industrial development, underdeveloped technical infrastructure and lack of institutional systems in territories recovered from the partition zones. As a result of war damage and robbery, Poland lost 48% of its horses (1.7 million heads), 38% of cattle (3.6 million heads), 52% of pigs (3 million heads) and 60% of sheep (2.7% million heads) [Adamowski and Lewandowski 1970, p. 16, footnote 11]. Polish agriculture thus entered the period of independence destroyed, with dramatically low production (plant production reached its 1909-1913 level in 1925 and livestock production – as late as in 1928), with no capital and huge hunger for land.

The greatest problem of agriculture was its agrarian structure affected by the so-called great estates. These were holdings of over 50 ha of land. They accounted for 0.9% of holdings in total and possessed nearly half of land (47.3%). The average area of such a holding was 460 ha[18]. Holdings of over 50 ha employed 430 thousand permanent wage workers and nearly 190 thousand seasonal workers (employed for 6 months)[19] – excluding home servants; plus casually employed members of the poorest rural population. However, most peasant holdings (up to 50 ha) were not large enough (5-6 ha on average) to maintain

century when capitalism began to be abolished "from the top down" through the gradual transformation of serf noble manorial farms into capitalist manorial farms.

[18] Particular prominence among great estate holdings was given to estates of over 1000 ha which accounted for about 0.06% of holdings in total (1964 holdings) in 1921, but which possessed 20% of land; they covered 3290 ha on average; they pursued extensive farming; forests accounted for over 50%, while arable land – for 24% [Landau and Tomaszewski 1999, p. 34].

[19] Permanent workers received an allowance in kind, i.e. they were partially paid in kind; some of them were granted a piece of land in respect of this allowance – up to 0.5 ha. Non-permanent workers were paid 30-60% less than permanent manorial workers [Landau and Tomaszewski 1999, p. 35].

a family. The agricultural reform became a pressing issue given huge rural unemployment and lack of the demand for labour outside agriculture.

Economic considerations and, above all, higher land productivity on small holdings were another argument in favour of the agrarian reform. Land transfer to peasant holdings would contribute to increasing agricultural production through the intensification of the structure and inputs of excess labour which would then reduce misery among peasants and increase the supply of agricultural products. The improved economic situation of peasants would increase the demand for industrial goods and would facilitate the accumulation of funds for development (i.e. primary capital accumulation).

The Sejm tackled the agrarian reform in 1919 ("Resolution on agrarian reform principles") and passed an implementing act on 15 July 1920. Parcelling was supposed to cover state land and land forcibly bought out by the State from landowners (and church land[20]) for compensation of half of the market price – peasants were to receive a credit of up to 75% of their parcel's value for land purchase, while invalids of war were to be granted land free of charge. The agrarian reform of 10 July 1919, however, did not have much practical significance. The provisions of the March Constitution of 1921 virtually impeded the implementation of the agrarian reform. A few years later, the agrarian reform was addressed in the Act of 28 December 1925 on the implementation of the agrarian reform which provided that the agricultural system should be based on fully-farming holdings and established voluntary parcelling by market prices; in estates of over 180 ha, the parcelling covered surplus land, in Polesia and Volhynia – of over 300 ha, while in industrial estates – of over 700 ha.

As a result of agrarian reforms in 1919-1938, 2 654 thousand ha of land was parcelled (sold) [Concise Statistical Yearbook, 1939, p. 70, Table 3] and 595 thousand ha was granted as compensation for the liquidation of predial servitudes [Strużek 1979, p. 18]. The parcelling was primarily voluntary; the parcelled land was mostly derived from latifundia of over 1 000 ha (whose area was reduced by over 2 million ha) and state land. As a result of the parcelling, 734 thousand new holdings, parcels and plots were established. In 1921-1938, peasant holdings' land increased by over 14% (2.8 million ha), while great estate holdings' land decreased by over 25% (2.3 million ha). Nonetheless, the average area of the former decreased by 12% (from 5.7 to 5.0 ha), as their number increased by 1 051 thousand new holdings.

Interwar agrarian reforms and the establishment of new agricultural holdings did not improve the agrarian structure of Polish agriculture (Table 2).

[20] The parcelling of church estates was subject to consent by the Vatican which was granted by Pius XI (formerly a nuncio to Poland) in 1925.

Table 2. Change in the agrarian structure of agriculture in 1921-1938

Area groups (ha)	Number of holdings ('000)			Area in total ('000 ha)		
	1921	1938	1938/1921 %	1921	1938	1938/1921 %
0-2	1 013.4	1 382.4	136.4	1 061	1 326	125.0
2-5	1 138.5	1 526.0	134.0	4 248	5 201	122.4
5-10	861.1	1 079.9	125.4	6 563	7 594	115.7
10-20	360.0	428.2	118.9	5 202	5 767	110.9
20-50	87.6	95.1	108.6	2 611	2 650	101.5
Peasant holdings in total	3 460.6	4 511.6	130.4	19 684	22 538	114.5
50-100	6.3	6.1	97.2	484	442	91.3
100-1 000	11.2	10.3	91.6	4 084	3 952	96.8
≥1 000	2.0	1.2	64.4	6 983	4 819	69.0
Great estates in total	19.5	17.6	90.7	11 551	9 213	79.8
Public law associations	10.7	.	.	6 700[a]	6 304	94.1
In total	3 490.8	.	.	37 935	37 875	99.8

[a] Public sector: state forests (50%), wasteland (30%), agricultural holdings of public law associations (20%).

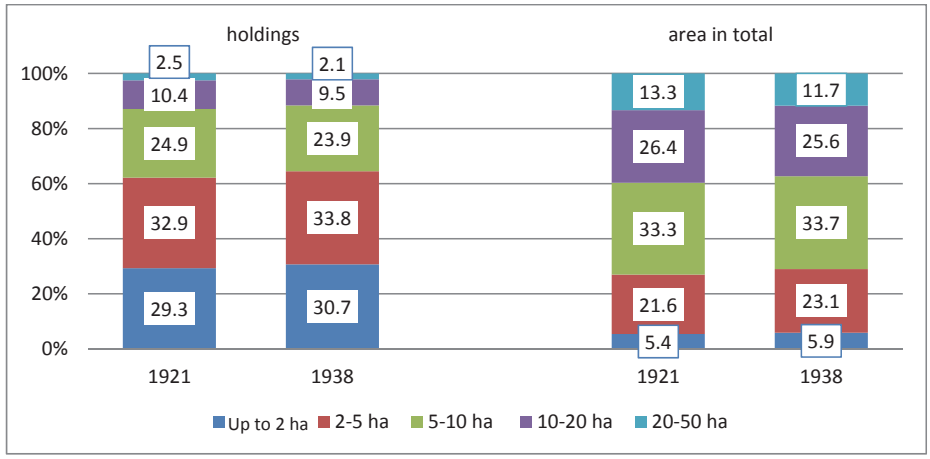
Source: Compiled based on [Mieszczankowski 1960, pp. 4, 329, 333; Mieszczankowski 1983, p. 71; Jezierski and Leszczyńska 1999, p. 267, Table 8.5; CSO, 2012, p. 333, Table 33(329) and p. 335, Table 34(30)].

Macroeconomic conditions, in particular underdeveloped non-agricultural sectors not capable of meeting needs of the labour market, were the main reason for increasing the number of peasant holdings. Therefore, the agrarian structure of peasant agriculture in the Second Republic changed slightly (Figure 1). After all, it did not change much in relation to the beginning of the century when the average area of a peasant holding was 4.3 ha in Galicia (1902), 5.7 ha in the Grand Duchy of Posen (1907) and 5.8 ha in the Kingdom of Poland (1905), while the share of holdings of up to 2 ha was respectively: 44, 67 and 25%, and of at least 20 ha – respectively: 1.5 and 2% [Jezierski and Leszczyńska 1999, p. 166, Table 6.3].

The peasant question was all about the fact that over 2/3 of holdings failed as a livelihood for peasant families – they were not the so-called fully-farming holdings which were considered as holdings of over 12 morgens (about 6 ha) [Fiedler 1933, p. 45].

The landless peasantry were a matter of great concern: agricultural workers on landowning holdings (about 400 thousand), the employed on peasant holdings (about 400 thousand), seasonal workers – landless tenants – mostly put up on peasant holdings (nearly 1.5 million) [Tomaszewski 1974, pp. 29-30].

Figure 1. Agrarian structure of peasant agriculture in 1921 and 1938 (%)



Source: Study based on [Jezierski and Leszczyńska 1999, p. 269, Table 8.6].

Interwar agriculture was characterised by a large number of agricultural workers which was due to poorly mechanised manorial farms and even more poorly mechanised peasant holdings of which larger ones (free peasants' holdings) could not do without employed labour force. Agricultural workers employed on a permanent and non-permanent basis, including their families, numbered about 3 million (Table 3).

Table 3. Population employed in agriculture: economically active and inactive (estimate)

Population employed on:	'000			%			
	1921	1931	1938	1921	1931	1938	1938/21
– manorial farms	1 715	1 285	1 120	54.4	42.3	36.6	65.3
– free peasants' holdings	427	465	483	13.5	15.3	15.8	113.1
– a non-permanent basis	868	1 103	1 267	27.6	36.2	41.4	146.0
– in horticulture, forestry and fisheries	140	191	190	4.5	6.3	6.2	135.7
In total	3 150	3 044	3 060	100.0	100.0	100.0	97.4

Source: [Mieszczankowski 1983, p. 114, Table 19].

In interwar (between First and Second World War) Poland, agriculture was a leader in job creation and income generation. In 1931, 65.2% of the economically active population (including assisting family members) was employed in agriculture, 16.6% – in industry and mining, while 5.3% – in commerce and insurance [Concise Statistical Yearbook 1939, p. 30, Table 26]. The share of the population by source of income was very similar, i.e. respectively: 60.6, 19.4 and 6.1% [Concise Statistical Yearbook 1939, p. 29, Table 25].

Holdings of most peasants were too small to ensure decent living. It is due to demographic growth and slow economic growth in non-agricultural sectors as well as a too mild agricultural reform. In 1921-1939, the population of Poland increased by 26.5% (from 27.4 million to 34.6 million people), including the agricultural population – by 18.5% (from 17.8 million to 21.1 million). The share of the agricultural population (61%) was only slightly lower than at the turn of the 19th century in the territory of the future Second Republic (65%) [Leszczyński and Jezierska 1999, p. 158]. The urban and rural population in 1921-1938 increased respectively by 39% and 22% which was reflected in only a slight fall in the share of the rural population in the total population – from 74% in 1921 to 72% in 1938. Of course, the agricultural population was dominated by the peasantry (85%). Unlike Western European countries, Poland could not solve its problem of the redundant agricultural population through permanent emigration, as it had no colonies. Emigration to urban areas and abroad[21] covered only 40-45% of a rural birth rate, while the remainder joined the unemployed in rural areas whose number in 1921 was estimated at about 5 million of the agricultural population.

The only way to reduce the agrarian overpopulation then was industrialisation which, however, was slow[22]. As a result, peasants' situation became hopeless: they had neither opportunities for migration or non-agricultural employment nor opportunities for increasing production and income from their agricultural holdings which was not enough for living, let alone for investment in the development of their holdings. It can be considered as the essence of the agrarian question at that time.

The economic situation of peasants dramatically deteriorated due to the crisis of the 1930s, in particular price scissors unfavourable for agriculture (Table 4). Intermediaries took over 1/3-1/2 of the value of commodity production in peasant agriculture, while the share of agricultural producers in retail prices paid by consumers was 55-65% [Iwaszkiewicz 1935, p. 26]. Another consequence was the increasing indebtedness of peasant holdings; which per 1 ha was as follows: in 1928 – 237 zlotys, i.e. 5.6 q of rye; in 1932 – 348 zlotys, i.e. 15.9 q of rye; in 1935 – 324 zlotys, i.e. 24.5 q of rye [Tomczak 1969, p. 28, Table 11].

[21] Emigration abroad in 1926-30 reached 964 thousand (including 679 thousand to European countries and 285 thousand to non-European countries), in 1931-35 – 229 thousand (135 thousand and 94 thousand), and in 1936-38 – 286 thousand (216 thousand and 70 thousand) [Concise Statistical Yearbook 1939, p. 52, Table 17].

[22] A shortage in non-agricultural jobs was reflected in the economically active and inactive population per 100 ha of UAA, i.e.: in 1921 – 71.2, in 1931 – 76.5, in 1938 – 81.5 people – of whom, on smaller estate holdings (up to 50 ha), respectively: 88.6; 89.2 and 92.8, while on manorial farms (>50 ha): 26.2; 26.6 and 27.1 [Mieszczankowski 1983, p. 53, Tables 3 and 4].

Table 4. Agricultural price indices in 1929-1938 (1928 = 100)

Specification	1929	1933	1934	1935	1936	1937	1938
Prices paid to producers for crops	76	40	34	33	35	52	44
Wholesale prices of products for agricultural production	104	85	80	73	65	64	66
Wholesale prices of industrial products purchased by farmers	101	73	70	66	65	66	65
Wholesale prices of domestic agricultural products	.	59	56	53	54	59	56

Source: [Mały Rocznik Statystyczny 1939, pp. 245-247, Tables 2 and 3].

Peasant holdings and capitalist enterprises responded differently to the crisis. Peasants forced to maintain their families had no other choice but to hide on their holdings like a snail in a shell and to produce, replacing purchased means of production with their own products. However, capitalist entrepreneurs considered a fall in prices below their own as an indication to reduce production, possibly even to shut down their establishments.

Peasants earned much less than other social groups. It is evidenced by *per capita* consumer income set in 1933 at 240 zlotys a year for peasants and manorial farmers, 420 zlotys for industrial workers, 540 zlotys for craftsmen and merchants, 1320 zlotys for white collar workers, 2400 zlotys for people living from profit and self-employment [*Badania* 1936, p. 131].

Food safety was a matter of great concern which was determined by demographic growth and progress in agricultural production. Despite huge war damage and a significant increase in the population of the independent Republic, food safety improved slightly (however, with widespread hunger and malnutrition). The production of the main crops grew similarly to the population, while animal production – faster than the population. It was partly due to a larger crop area and yields, and changes in the crop structure. *Per capita* meat consumption slightly increased – from 18.4 kg in 1929 to 22.4 kg in 1938, much higher in larger urban areas, e.g. 61.6 in Poznań and 51.7 kg in Warsaw (1937) [Concise Statistical Yearbook 1939, p. 160, Tables 12 and 13]. Some part of production was exported which was extremely important given the poorly industrialised economy. This export accounted for 28% of the total export in 1938[23].

For centuries, the agricultural production of peasant holdings was to meet family and their own needs. It did not change much in the interwar period, in particular due to the fragmentation of holdings. However, the need for earning

[23] The main export products were ham and pork loin in airtight packaging – 17 thousand tonnes, bacon – 21 thousand tonnes, pigs – 266 thousand heads, eggs – 29 thousand tonnes, butter – 13 thousand tonnes, and also barley – 238 thousand tonnes, and rye – 108 thousand tonnes [Concise Statistical Yearbook 1939, p. 176, Table 16].

money marked the beginning of production oriented also towards the market. The commercialisation of peasant holdings was initiated, but was poorly advanced. The same applied to great estate holdings which were usually extensively operated. The general and agricultural crisis made the commercialisation of agricultural production stagnate. The marketability of production of 4 types of grain in the marketing year of 1928/29 was 24%, 1933/34 – 22%, and 1938/39 – 28%; the marketability of cattle – respectively 48, 38 and 44%, of pigs – respectively 84, 55 and 71%, while of milk – slightly over 20% [Mieszczankowski 1983, *passim*].

It can be considered that the "balance" of the agrarian question in the 20-year interwar period is zero. Reasons behind this situation are the slow development of non-agricultural sectors of the economy and the cautious agricultural reform which was of no larger economic importance and did not produce effects peasants had hoped for. Peasant agriculture was not integrated into the capitalist economy [Chrobak 1998, p. 254]. One positive element in the socio-cultural sphere was the social activation of the rural population (development of rural cooperatives, agricultural circles).

3. People's Republic of Poland

The course for both the industrialisation of the country and the socialisation of agriculture provided a framework for the agrarian problem in the People's Republic of Poland (PRL). The former created an environment for absorbing surplus labour force from agriculture and increasing the supply of industrial means of agricultural production. It was assumed that the outflow of people from agriculture would cause a shortage in its labour force, thus rendering land concentration and collective forms of farming necessary. However, the latter was justified by the Marxist law of production concentration which was supposed to follow the Soviet model, i.e. into state holdings (sovkhozes) and cooperative holdings (kolkhozes). A basis for the former was provided by the agricultural reform and for the latter – by collectivisation. While the course for industrialisation created a chance for the development of the family economy, the course for socialisation limited this chance by legal solutions, uncertainty over the future of family holdings, and the allocation of limited industrial means of production and capital goods in a way that discriminated against family agriculture.

In practice, the course for the socialisation of agriculture was initiated by the agricultural reform implemented pursuant to the Decree of the Polish Com-

mittee of National Liberation[24] of 6 September 1944. On the one hand, the reform increased the number of small holdings and, on the other hand, established large-scale state agricultural holdings – intended to be a developmental sector of socialised agriculture. In 1945-49, peasants were granted over 6.1 million ha of land as a result of parcelling and settlement; 5.6 million ha was covered by 814 thousand newly established holdings and 0.5 million ha was used to enlarge 250 thousand already existing holdings; newly established holdings covered 6.9 ha on average [Jezierski and Leszczyńska 1999, p. 411]. However, the principle of the agricultural reform, as laid down in the Decree of the Polish Committee of National Liberation, that the agricultural system was to be based on strong holdings capable of efficient production, being the private property of their possessors, was not followed. Peasants were granted land in accordance with a political directive which followed the so-called triune formula: defending the poor, persuading mid-incomers to socialism and fighting kulaks. In fact, the agricultural reform pursued the following political objective: to abolish the landed gentry and to win the rural poor over to the new system. The agricultural reform as such led to insignificant changes in the agrarian structure of peasant agriculture – it did not differ much from that in the pre-war period. Estate parcelling was not compensated for and the landed gentry status was practically abolished.

The socialisation of peasant agriculture was directly served by a programme of universal collectivisation – establishing agricultural production cooperatives (APCs) since 1949 based on economic and non-economic instruments. The number of agricultural production cooperatives in 1949-1955 increased from 243 to 9 750. In 1955, the number of cooperative members reached 205 thousand, while land acreage – 1867 thousand ha. Following the so-called October thaw[25] in 1956, the programme of collectivisation was abandoned. Most cooperatives (APCs) were dissolved this year – in 1957, their number fell from over 10.5 thousand to slightly more than 1.5 thousand and followed a downward trend in subsequent years.

The abandonment of collectivisation did not mean the abandonment of the doctrine of socialisation, although the provision of the working class, whose number was increasing, and the urban population in general with food necessitated several times that the doctrine be made less rigid and that the peasant economy be supported, since the People's Republic of Poland continued to face an insufficient supply of food until its very end. The spectre of socialisation hung over the peasant economy until 1983 when the Sejm guaranteed the *invio-*

[24] The Polish Committee of National Liberation – PKWN.
[25] Take-over of power by W. Gomułka's faction following accidents of June 1956 in Poznań.

lability of individual agricultural property which had a significant and positive impact on farmers' attitudes and motivations towards development.

Relatively high demographic growth and war damage made the inherited problem of employing rural (agricultural) labour force in non-agricultural sectors and reducing (open and hidden) unemployment a part of everyday life. In the years of reconstruction of economy (1947-1950), non-agricultural employment growth was about 0.5 million people a year, thus increasing generated national income (production per industrial worker at that time was three times higher than in agriculture) and labour productivity, including in agriculture (land allotment pursuant to the agricultural reform and the outflow of some redundant labour force). The development of non-agricultural sectors, in particular industry, absorbed some surplus labour force from agriculture, but could not solve the problem completely. The 1950s and the 1960s – the years of the country's forced industrialisation – were characterised by rapid growth in the dual-occupation population in agriculture – from 610 thousand in 1950 to 2 923 thousand in 1966 [Lewandowski 1972, p. 145], but the number of the employed in agriculture decreased only slightly, i.e. from 7 549 thousand in 1950 to 7 200 thousand in the mid-1970s [Frenkel 1990]. In the early 1970s, about 3 million of the rural population earned a living outside agriculture, including about 510 thousand farmers running agricultural holdings of over 2 ha. Employment was undertaken mostly for economic reasons – due to low agricultural income.

The phenomenon of part-time farming developed as a result of economic conditions. It is about an insufficient urban housing stock which limited definitive migration, but also low remunerations in industry, especially as regards unskilled workers who were mostly peasant workers. In order to maintain their families, they needed to earn income from both employment and their agricultural holdings, and ensure low accommodation costs. The phenomenon of dual occupation made agriculture less important as the main livelihood, while helping agricultural peasant families improve their income situation and significantly reconciling differences resulting from agricultural income. In the 1950s, the income of the dual-occupation population was slightly higher than that of people for whom their agricultural holdings were the only livelihood (firstly, smaller holdings meant lower payments and, secondly, growth in wages was higher than in agricultural production).

Polish peasant agriculture was also characterised by a decline in employed labour force. In 1960, permanently employed labour force in family agriculture, which was 117 thousand (1.9% of the total economically active population in individual agriculture) back in 1950, was only 38 thousand, while in the 1970s –

only 1% of family holdings used employed labour force (in pre-war years, about 15% of free peasants' holdings used permanently employed labour force).

The process of industrialisation absorbing some labour force from peasant families created an environment only for slow land concentration which was made even slower by the political doctrine of agricultural socialisation. Relatively high demographic growth put pressure on agricultural production growth, but exerted no pressure on changes in the agrarian structure. Non-agricultural sectors could neither absorb the surplus agricultural population nor produce and offer agriculture sufficient means of production, in particular agricultural technology. The dilemma whether to agree to low labour productivity outside agriculture (dogma of full-time employment applied) or to hidden unemployment in agriculture was thus still present. Pragmatism made the latter win.

In the 1970s, the process of improving the agrarian structure started – the group of relatively larger holdings strengthened. Increasing the area of the average peasant holding was recognised as one of necessary conditions for improving the efficiency of farming and for further agricultural production growth. However, progress in changing the agrarian structure was rather little (Table 5), and the area of family holdings in Poland is still distant from that in Western Europe[26].

Table 5. Agrarian structure of peasant agriculture in Poland in 1950-1990 (holdings of >1 ha) (per cent)

Area (ha)	1950	1960	1970	1980	1990
1-2	15.0	17.8	19.7	18.7	17.7
2-5	35.9	37.2	35.0	37.0	35.1
5-7	17.3	16.2	15.8	15.3	14.9
7-10	18.0	15.7	15.5	14.7	14.9
10-15	8.9	9.7	10.8	10.0	11.3
≥15	4.9	3.4	3.2	4.3	6.1
Average area per holding	5.3	5.2	4.7	5.6	6.3

Source: [Woś 1996, p. 68, Table 21].

The industrialisation of peasant agriculture was slow, so were changes in the agrarian structure. The process accelerated only in the 1970s when the supply of industrial means of production increased. The concentration of animal production began at that time – industrial farms were established in the social-

[26] For instance, the average holding in Poland in 1990 covered 6.3 ha and was about 3 times smaller than in Germany and about 6 times smaller than in France.

ised sector. Its scale, however, was small. Poland was far behind Western European countries[27].

As non-agricultural sectors, in particular industry, were developing, agriculture was losing its importance as a livelihood for the population. Nevertheless, the number and share of people, for whom agriculture was the main livelihood, remained high. In 1950-1988, their number fell by 5.1 million (1950 – 11.8 million which accounted for 47% of the total population; 1960 – 11.3 million – 38%; 1970 – 9.7 million – 30%; 1978 – 8.2 million – 23%; and 1988 – 6.7 million – 18% of the total population) [Gorzelak 2010, p. 92].

Income is most evident as a symptom of the agrarian question from peasants' point of view and determined their attitudes to power. By 1950, in peasant holdings the main factor of growth in income from agriculture was production growth due mostly to restocking and fallow land development. Land allotments, settlement and debt relief, which took place in the PRL, also helped improve the income situation of the agricultural population. The years of forced industrialisation (1950-56) deteriorated the income situation of peasant agriculture. Following the October turning point (1956), higher agricultural prices, a better supply of means of production to agriculture, lighter financial burdens, the abolition of compulsory milk deliveries (1958) and higher credits for peasant holdings made farmers' real income increase[28].

In 1971, further decisions were taken to increase the income of the agricultural population, i.e.: compulsory deliveries were abolished, prices were raised, thus making agricultural production more profitable, the tax progression was reduced, farmers were put in a better position to purchase land from the State Land Fund (PFZ), credit support for rural areas was increased, the property insurance liability of the State Insurance Fund (PZU) was widened, individual farmers were covered with free treatment and their possibilities of transferring holdings to the State in exchange for a retirement pension were gradually increased. In 1977, a pension act for farmers was passed. Its provisions were successively introduced until 1 July 1980[29]. In 1982, a new pension act was passed

[27] Average herd size of cattle on cattle holdings in 1987 (head): the EEC-12 – 32.2 heads (West Germany – 37.5 heads, France – 45.5 heads, Italy – 23.5 heads, the UK – 82.1 heads, Portugal – 6.6 heads), Poland (1990) – 4.7 heads; of cows: the EEC-12 – 17.1 heads, Poland – 2.4 heads; of pigs: the EEC-12 – 56.7 heads, Poland – 8.2 heads. The share of cattle holdings: the EEC-12 – 34.9%, Poland – 70.5%; of cow holdings: 20.2 and 68.5%; of pig holdings: 26.0 and 62.7% [Poczta 1994, pp. 72-73, Tables 10-12].

[28] The ratios of the credit paid to the total cash revenue and of indebtedness to clean production in the non-socialised economy in agriculture were as follows: 1961 – 10.9 and 11.6, 1970 – 17.1 and 44.3, 1980 – 12.3 and 46.2 [Ostrowski 1988, p. 135, Table 19].

[29] The peasant population was not entitled to social security and healthcare benefits until 1962 when peasant families running agricultural holdings were granted the right to voluntary old-

to harmonise basic principles of the pension system for farmers and workers, to increase individual benefits rather than family benefits as before, to abolish the ceiling for benefits, replace the so-called production minimum conditioning the granting of benefits with the obligation to sell agricultural products, which were equivalent to 0.5 q of rye per 1 ha of UAA, to the State. In 1983, agricultural policy guidelines were adopted which, *inter alia*, recognised the equality of agricultural sectors and provided for the *sustainable profitability of agricultural production, and the income parity of the agricultural and non-agricultural population in an effective production environment*. These political declarations were welcomed as being justified and oriented towards development.

Among determinants of the peasantry's income, employment (more specifically – a fall in the number of the employed) played a minor role, as the number of the (full-time) employed per 100 ha decreased slightly, i.e. from 34.3 in 1950 to 27.4 in 1985. It was mainly due to peasant holdings' high birth rate which gradually fell and an insufficient absorption of agricultural labour force by non-agricultural sectors. In 1950-1975, the birth rate was 9 742 thousand, including 2 865 thousand (29%) in agriculture, non-agricultural employment was "found" by 5 888 thousand people and the balance of migration abroad in agriculture was minus 37 thousand people. The agricultural population thus decreased from 11 756 thousand in 1950 to 8 696 thousand in 1975 [Latuch 1978, p. 60, Table 2].

The years of the People's Republic of Poland were a period of various agricultural changes which cannot be assessed unequivocally in the context of the agrarian question. The industrialisation of the country, to which peasant agriculture's contribution is indisputable (migration and accumulation contribution, and cheap food), had a significant impact on peasant agriculture. First of all, by opening up new opportunities for work at established and developed enterprises, service and administration establishments, it "removed" a significant part of surplus labour force from agriculture, offered the practically unlimited demand for agricultural products and gradually increased means of production flowing to agriculture, thus initiating the industrialisation of agriculture. It created an environment for and stimulated deep, even fundamental changes in agriculture which made traditional peasant agricultural holdings be edged out by farm family holdings. Industrialisation triggered interrelated processes in the sphere of

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-age insurance and the right to the retirement of farmers whose holdings were forcibly taken over by the State. Since 1968, elderly farmers, if they had had no children willing to take over their holding, would have been granted the right to the transfer of their holding to the State Land Fund in exchange for a retirement pension and other social benefits. Its amount depended on area, soil quality and the state of the holding's indebtedness.

production organisation: concentration, specialisation and intensification, while in the social sphere – the process of "washing out" and deepening the diversification of holdings and multi-occupation among agricultural families. Structural transformation in peasant agriculture progressed slowly due to both a shadow cast on it by the doctrine of agricultural socialisation which rejected the classic transformation of peasant holdings into farm holdings, i.e. the establishment of large individual holdings, and macroeconomic conditions. As regards the latter, it is all about non-agricultural sectors' capacity for the absorption of labour force, the ability to free up money for agriculture and food safety. The People's Republic of Poland continued to face the problem of food safety until its very end. By the 1990s, the ratio of excess consumer demand over supply in Poland was estimated at 10-20% [Rajtar 1987]. The pressure of the demand for food (mostly meat), which resulted from income growth, but primarily from relatively cheap food (social resistance, but also interests of the working class and power – "buying" peace), was strengthened by shortages in industrial consumer goods which made the demand flood the food market instead of alleviating pressure on that market.

The industrialisation of the country significantly influenced the socio-cultural sphere of peasants, including the activation of peasant and agricultural organisations (apart from their centralisation). Changes in the sphere of culture and in the cultural sphere are synthesised by Z. Tomaszewski: *The patriarchal order of a family is fading away. While the only way of professional advancement in a traditional family used to be through the acquisition of real estate, in particular land, by climbing up the social ladder (e.g. from a small-sized holding to a middle-sized holding) and while the agricultural profession used to be taught outside school (which opened up doors to a different world), professional advancement is nowadays increasingly taking place through the acquisition of professional qualifications at various types of agricultural schools and the use of so-acquired knowledge to increase the economic level of a holding...* [Tomaszewski 1974, pp. 129-130].

It can be concluded that the civilisation progress of Polish rural areas in the post-war period is indisputable. However, it was not based on *major changes in the agrarian structure and a marked improvement in the efficiency of agricultural production* [Bywalec 1995, p. 58].

4. Political transformation

The political transformation paved the way for agricultural modernisation typical of the classic capitalist way, i.e. the farmer's way. Foundations for the political change started being established before 1989. These were mainly: the

marketisation of the food economy, in particular the release of agricultural prices from direct state control, the liberalisation of marketing, processing and trade in agri-food products, demonopolisation and the stimulation of competitiveness and entrepreneurship, the privatisation of the agricultural environment which led to breaking ties created over the years, but contributed, at the same time, to increasing the effectiveness of agricultural actors and the emergence of private monopolies (replacing previously existing state and cooperative monopolies); the decomposition of institutions typical of the command and control economy, while establishing new ones (primarily the Agricultural Property Agency of the State Treasury – AWRSP, the Agency for Restructuring and Modernisation of Agriculture – ARMA, the Agricultural Market Agency – ARR); taking the course for the abolition of socialised agriculture (primarily state agricultural holdings – PGRs), limiting the labour market for peasant workers and developing a social policy towards the agricultural population.

After introducing the free market economy system in 1990, macroeconomic conditions were highly detrimental to agriculture. In fact, there were numerous agriculturally detrimental phenomena, such as: high inflation and a high credit interest rate, reduced employment in non-agricultural sectors and at failing socio-economic organisations serving agriculture, the abolition of guarantees for buying agricultural products at pre-determined prices and the abolition of subsidies to prices of means of production, a barrier to food supply, agricultural prices under pressure from supply, the elimination of legal restrictions on the establishment of different enterprises and the creation of jobs by natural persons. Lower budget transfers, the dismissal of peasant workers from privatised and restructured workplaces, a nearly 1/5 lower agricultural market demand, a new balance of supply and demand below the previous level[30] and, at the same time, the protection of the internal (domestic) market being significantly limited hit agriculture particularly hard. It led to increased rural unemployment[31], dramatically unfavourable ratios of agricultural prices[32] and, consequently, a dramatic decline in agricultural income.

Internal conditions of the agricultural sector were the elimination of the state agricultural sector, no matter the consequences, the decomposition of agricultural institutions and organisations, the emergence of an army of the unem-

[30] The Shock Therapy – the Balcerowicz Plan (or the Sachs-Lipton Plan) – was formalised in the form of 10 acts of law in December 1989 and led to, *inter alia*, 1/3 lower wages and 1/2 lower farmers' income.

[31] In the mid-1990s, rural unemployment was estimated at 1-1.5 million [Bywalec 1995, p. 59].

[32] In 1990, the ratio of prices of products sold by farmers to prices of products and services purchased by farmers for current production and investment – following its leap in 1989 to 125.6 – decreased to 41.7 [Statistical Yearbook 1991, CSO, Warsaw, Table 7(276)].

ployed or unused labour resources, and – above all – a collapse in agricultural income. At the peak of its development (1986-1990), the state sector of Polish agriculture held 19% of agricultural land and generated 21% of global production, 18% of final production and 31% of commodity production [Zgliński 1995, p. 38]. It was, however, more material-intensive and less effective than the peasant economy. PGRs were not economically adapted to the Shock Therapy of 1990, but their fate was sealed by a political decision[33]. Similarly to non-agricultural enterprises, however, lack of capital prevented capital privatisation. The abolishment of PGRs did not considerably improve the agrarian structure of Polish family agriculture, but it released a scourge of landowners, not to mention vast estates lost by the State Treasury. It was a sacrifice made by agriculture for the sake of political changes – after all, unnecessary and plunging society into conflict. A sacrifice was also made by peasant agriculture which had to absorb an army of peasant workers released from privatised, restructured and liquidated enterprises, and to agree to a dramatic decline in income.

The first years of the political transformation – the so-called period of the "Shock Therapy", were marked by a blockade of the demand for agricultural products, a dramatic fall in farmers' income, a significant decline in the headage of livestock and, consequently, a collapse in agricultural production. The situation of peasant agriculture was made even more difficult by a quite unreasonable, far-reaching opening of the domestic market to goods imported from modern and highly efficient and subsidised Western European agriculture which was, after all, highly protected. There are also liquidated, disappearing or increasingly inefficient "old" institutions and still-fledgling new institutions relevant to the market system.

The founding fathers of the Shock Therapy assumed that slower changes would make adverse effects of the old system accumulate, while postponing effects of the new one – possibly halting the changes. They rejected the specifics of agriculture, while subordinating its interests to requirements for overall development, agreeing not to exploit a significant part of agricultural potential – after all, similarly as in the case of industry. Agriculture was sacrificed for the sake of the political transformation.

Peasants faced the challenge of breaking the barrier of low efficiency which was necessary for competitiveness reasons, but increasingly difficult for most farmers, with blocked migration to other occupations. The recession and the market economy had different effects on peasant holdings: 10-15% of farmers started looking for solutions to new conditions, about 50% of holdings fo-

[33] *The privatisation of state holdings was considered as the top priority and economic effects were supposed to come later* [Woś 1994, pp. 29-30].

cused on survival and 35-40% of usually small holdings reduced their activity (lack of funds, equipment, unprofitability, land abandonment) [Wojtaszek 1994, pp. 108-109].

The outflow of people from agriculture to other occupations was difficult given high unemployment, poorer preparation for non-agricultural employment, housing problems, commuting costs, etc. Effects of deteriorating ratios of agricultural prices can be compensated for under such conditions by reducing employment, which has been and still is of significant importance in highly developed countries, to a limited extent. If the outflow of people from agriculture and area changes are slowed down, the stimulation of implementing progress and modernising production workshops is reduced at the same time, so are thus a reduction in production costs and an improvement in the quality of manufactured agricultural products. However, biological progress should be preferred, since it does not face any agrarian structure constraints, is relatively cheap and environmentally friendly.

In view of integration into European structures and entering the competitive market, the restructuring and modernisation of agriculture were urgently needed. However, there were no objective conditions for rapid changes in agriculture due to, *inter alia*, its income inefficiency and an employment barrier. Only a small share of peasant holdings were capable of extended reproduction and Poland could not afford in the 1990s to follow the EEC's agricultural policy. Peasant holdings were thus placed in a very difficult situation, with a vague prospect of finding a way out. Firstly, the establishment of institutions and organisations of farmers, which were adequate for the free market economy, was slow which made agricultural interests poorly protected. Scattered and poorly organised or unorganised farmers always hold a weaker position on the agricultural market than agri-food enterprises, manufacturers of means of agricultural production and trading companies (intermediaries)[34]. Secondly, leaving pricing to market play alone excluded one of the main income policy instruments which was in use in the command and control system, with no new agricultural institutions and organisations developed, resulted in draining value created in agriculture by prices and other market transaction conditions. One advantage, however, was that the exclusion of prices somewhat automatically improved the role of production costs and quality in determining agricultural income [Grzelak 2008, p. 30]. Thirdly, a shift from permanent demand surplus to supply surplus on the agri-food market indeed made it impossible to increase agricultural income in the entire agricultural sector by increasing agricultural production. The supply

[34] The situation was made more difficult by the weakening or elimination of traditional agricultural and rural organisations.

surplus was mostly due to the import of usually subsidised agri-food products which was undoubtedly favourable for consumers, but unfavourable for farmers. It must be added that the surplus of import over export means new jobs in other countries which is not irrelevant especially given huge unemployment.

The agrarian question in the transition period was manifested mainly by income inefficiency in agriculture. In that period, there was a profound decline in real agricultural income due to blocking agricultural and personal income by counterparts. In the 1990s, real agricultural income declined by as much as about 60%, while the personal (disposable) income of households with a user of an individual agricultural holding – by about 20%. At the same time, real income from remuneration and social benefits was rising, resulting in a huge spread between the income of agricultural holdings and the income of other socio-occupational groups. The spread of *per capita* personal income between households of farmers and households of employees was over 30% and nearly 50% as regards households of the self-employed outside agriculture.

By liberating automatic market mechanisms, the political transformation undoubtedly undermined the State's capacity to shape the income of farmers. The traditional way of increasing agricultural income by increasing agricultural production was blocked when the demand for agricultural products was stable or just slightly increasing which was further aggravated by the inflow of agri-food products from abroad. It had its bearing on prices of agricultural products which *de facto* ceased to be a driver of income growth in several-year periods (if cyclical and random fluctuations are eliminated). The value of added agricultural production in 1991-2004 increased by 16%, but unfavourable ratios of agricultural prices (agricultural price scissors down to 63%) resulted in a decline in the value of added agricultural production by about 30%.

Highly developed countries found the right time to launch special mechanisms of compensation for income effects of this trend of relatively decreasing agricultural product prices in the form of fund transfers from taxpayers and consumers (budget transfers), and support for adjustment processes in agriculture to new conditions. In Poland, however, insufficient – due to low agricultural income – funds of agricultural holdings were not sufficiently supported by transfers from a lean budget which had to support other sectors. Nevertheless, processes of adjustment within agriculture, which were mostly autonomous, involving the concentration of production potential in agriculture (changes in the area structure), production scale-up (production concentration) and a reduction in production costs by substituting human labour for objectified labour (mechanisation – technification – automation) and absorbing scientific and technical progress, including biological progress (exploiting developments in biotechnology

and genetic engineering), also encountered barriers – primarily an income barrier and, on numerous holdings, a mental barrier. The collapse in agricultural income affected the modernisation of agricultural holdings. Only about 10% of family holdings were modernised.

The problem of farmers' income in the transition period was aggravated largely by a state policy, especially because of adopting solutions which were adequate for a completely different phase of agricultural development and the macroeconomic situation. In particular, the policy selectively chose solutions to the liberalisation of foreign trade not only with Polish producers unprepared for competition, but also with much weaker logistics and financial support than that of producers from Western countries. The balance of trade in agri-food products was thus negative which further weakened the already low demand for those products manufactured by domestic producers. It was the main cause of a dramatic decline in ratios of agricultural prices and a shift of the burden of disinflation to farmers, albeit favourable for consumers and the economy as a whole.

The economic situation of the agricultural population was also largely influenced by the "redirection" of many thousands of workers, who were released by privatised or failing workplaces in both urban and rural areas, to agriculture. Agriculture became a huge "repository" of people who lost their jobs or who were entering the working-age population and could not find a job. It had direct income (and other) effects on agriculture which were not compensated for.

In conclusion, the political transformation paved the way for agricultural transformations by farming means and created an environment for the industrialisation of agriculture: commercialisation, concentration, intensification and specialisation. However, the pace of change was conditional on income and employment barriers which did not create economic conditions for changes in the agrarian structure of peasant agriculture. The agricultural system, however, underwent a significant change, i.e. socialised great estate was replaced with private great estate. Market opening strengthened food safety which resulted in relatively cheap food. The situation is worse with respect to the use of agricultural labour resources which are blocked by the phenomenon of unemployment outside agriculture. The number of the employed in agriculture was thus too high.

5. Integration into the European Union

Poland's accession to the European Union created favourable conditions for solving the agrarian question by industrial means. Subsidies granted under CAP mechanisms to agricultural holdings created opportunities for production intensification. In particular, it applies to mineral and chemical fertilisation which was 92 kg in the pre-accession period and 132 NPK/ha of UAA in 2015.

It is four times the world's average and already more than in the Netherlands, for instance, where fertilisation was 130 kg in 2013 and followed a clear downward trend, or France – 90 kg (following a downward trend as well), and comparable to Germany (145 kg) [Rocznik Statystyczny 2015, p. 832, Table 59(650)]. Increased mineral (and chemical) fertilisation cannot nowadays be considered as a positive trend primarily given the ecological aspect, but also production costs. Nevertheless, the increased share of holdings, which do not use any mineral fertilisers and limit the use of organic fertilisers at the same time, has to be assessed even more negatively. The share of individual holdings (>1 ha of UAA), which do not use any mineral and chemical fertilisers, increased from 11% in 2002 to 27% in 2013 and that of holdings, which do not use any natural fertilisers – respectively from 28% to 51%; despite severe soil acidification, calcium fertilisers are used by only about 20% of holdings. The provision of holdings with agricultural machinery (tractors, combine harvesters, machines and other agricultural equipment) significantly improved, although it is hard in many cases to find any economic justification.

More intensive farming is reflected also in the crop structure, with a decrease in the total crop area. A larger area of industrial crops (in particular rape and turnip rape – up by 128% in 2004-2014) as well as grain maize (up by 101%) and green maize, which increased mainly at the expense of potatoes (down by 64%), sugar beets (down by 34%), rye (down by 43%) and cereal blends (down by 40%), draws attention. As regards animal production, there is an evident change in technologies of feeding, in particular poultry and pigs, with imported fodder. In 2005-2014, intensification led to agricultural production growth which is as follows in the case of individual holdings (constant prices): global production – 18.2% (plant and animal production – respectively 18.4 and 14.5%), final production – 22.8% (29.8 and 15.7%), and commodity production – 29.1% (30.3 and 25.6%) [Rocznik Statystyczny 2015, pp. 473-474, Table 6(376)].

Labour market activation, a significant increase in migration abroad and a slowdown in demographic growth significantly reduced the problem of surplus labour force in family agriculture. There is, however, the problem of insufficient labour force in large commodity gardening and horticulture holdings where casual and seasonal employment increases. Non-agricultural employment intensifies, with non-agricultural remuneration increasing at a similar rate in agricultural families and rural landless families; in the latter, the share of the employed of working age outside agriculture is higher by about 15 pp. About 3/5 of them were employed in urban areas which, of course, involved commuting. The emergence of cars clearly increased opportunities for wage employment without permanent migration to urban areas [Chmieliński 2013, p. 22].

Generally, accession to the European Union made significant adjustments to macroeconomic conditions of agricultural development. It applies in particular to [Zegar 2014, p. 30]:

a) easing a barrier to the demand for agri-food products, provided that they are competitive (on domestic and foreign markets), and opening up virtually unlimited European and world markets to the Polish agri-food sector;
b) easing the employment barrier mostly through opening up markets to migrants from Poland, including from Polish rural areas and agriculture (facilitating the "removal" of labour force surpluses);
c) significantly increasing funds for the development and modernisation of agricultural holdings through transfers from the EU budget to agriculture and the availability of credits;
d) access to new technologies and innovation through access to means of production, including seeds;
e) new ways of managing and disseminating financial instruments and financial engineering as a whole, and information flow, exchange, and scientific research and advisory cooperation;
f) taking on the *acquis communautaire* of the European Union and the necessity of subordination to CAP mechanisms which significantly reduced the anti-agriculture and anti-peasant trend in a national policy.

III

TRANSFORMATIONS OF FAMILY AGRICULTURE

1. Industrialisation of agriculture

The transformation of agriculture during capitalism was a response to needs of capital which, entering agriculture too late, was initially not so much about direct benefits, as other uses were more favourable, but primarily about the acquisition of cheap labour force and cheap food. In an early development phase of capitalism, the problem of labour force was less important because of agrarian overpopulation, while in a further advanced development phase of capitalism – the acquisition of labour force necessitated also releasing agricultural workers. It is what the industrialisation of agriculture was all about, covering four basic processes, i.e.: commercialisation, concentration, intensification and specialisation. They triggered the technological treadmill[35] driven by an economic mechanism of changes in peasant holdings: money needed for means of production (fertilisers, fodder, agricultural technology), and for consumer goods and services (due to following urban consumption patterns). The technological treadmill provided for two ways of development, i.e. into agricultural enterprises (farms) or auxiliary (subsistence) holdings – production intended either for captive use, or for local markets or direct sale.

A shift from solely or primarily production for own needs, i.e. a household, to production for sale (for the market) is called **commercialisation**. This reorientation of production was necessary for starting the modernisation of peasant agriculture. It is not only about changing proportions. After all, a significant part of production (two or three tithes) in the serfdom period was handed over to others. The same phenomenon was observed also later with respect to indebted peasant holdings which often handed over half of their production to pay off their debt. Both cases were about handing over products manufactured to meet a family's existential goals as part of the traditional organisation of these holdings. However, a shift to market production (originating from the rent economy) brought about a revolution in the organisation of agricultural holdings, since: 1) manufacturing of one or another product for sale was based on the demand and a better or worse economic calculation; 2) market production destroyed the tra-

[35] The term *technological treadmill* introduced by Willard Cochrane covers a sequence of events: growth in production (supply) over demand → reduction in agricultural prices → change in technologies to increase production (intensification, concentration, specialisation processes) → growth in supply (overproduction) → reduction in prices → growth in production → etc. [Cochrane 1958].

ditional – internally sustainable – organisation of holdings, thus initiating industrial specialisation and intensification processes, and the so-called economies of scale; 3) market competition forced specialisation and production scale-up through land concentration and generally agricultural holdings' production potential supported by industrial intensification; 4) macroeconomic and macrosocial phenomena created new motivations and the demand for money. Money began to overshadow the original production purpose of peasant holdings. Dependence on money made farmers increasingly dependent on forces outside their capabilities and control. The commercialisation of agriculture was driven primarily by the need for money as a result of drawing agricultural holdings into the orbit of capital. Capitalism was first to make – through commercialisation – farmers undertake systematic efforts to increase production as required by the market [Žmolek 2013, p. 459], but commercialisation made holdings more sensitive to agricultural price scissors, which significantly influenced the economic situation of agriculture, at the same time. Commercialisation was also driven by the need for economic effectiveness made even more pressing by competition and concentration (scale of production) and specialisation. Over time – as agribusiness and vertical food chains developed – commercialisation was stimulated by the integration of holdings into these chains and the increasing social division of labour – the increasing provision of industrial means of agricultural production to holdings and the need for increasing labour productivity. Macroeconomic factors, non-agricultural spheres of the agri-food economy and the efficiency of farmers' institutions, and – nowadays – phenomena called globalisation started becoming increasingly important in the course of these processes.

Economic underdevelopment in Poland and the low income of peasant families contributed to promoting the spread of production and (natural) consumption subsistence and, consequently, agricultural modernisation. The fact that a large number of family holdings, which are oriented mainly towards subsistence, have not gone extinct so far can surely be considered as the specifics of Polish family agriculture and one of its distinguishing features[36]. It is so due to several factors: 1) the legacy of the past in terms of the development of Polish agriculture which led to agrarian fragmentation; 2) the specifics of industrialisation in Poland which did not make concentration necessary, as was the case with the agriculture of highly developed capitalist countries; 3) urban war damage and housing difficulties faced by rural migrants; 4) counteracting land concentration for doctrinal reasons as part of individual agriculture in the People's Re-

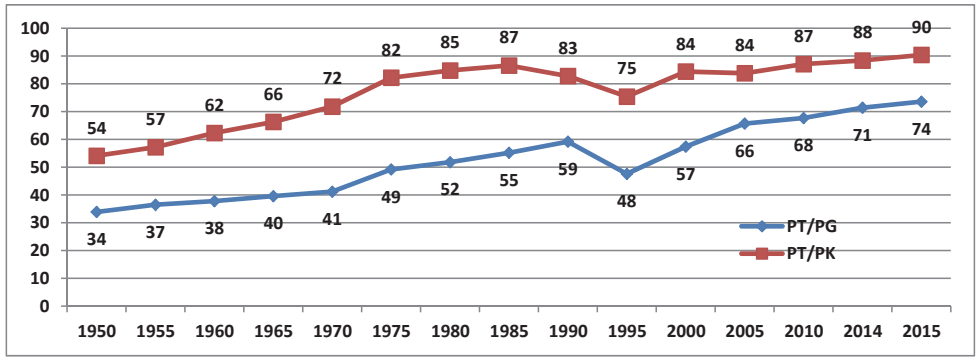
[36] The share of subsistence holdings, i.e. holdings with production for household purposes exceeding production for sale is over 1/3 of holdings of over 1 ha of UAA in total; it was nearly 1/2 in the early 1990s.

public of Poland; 5) a relatively dense settlement and road network enabling commuting in urban areas; 6) relatively low remunerations of poorly qualified employees from agricultural families who are forced to supplement their income (and then equally low social benefits) with income from their agricultural holdings; 7) a poor offer of food products in the People's Republic of Poland; 8) economic considerations as land capitalisation and psychosocial considerations, including the desire to live in relative isolation in the bosom of nature.

The main measure of commercialisation is marketability which is generally the ratio of commodity production to global production or final production[37]. The higher the industrialisation of agriculture, the higher the ratio as such, although the period of the first "Shock Therapy" (early 1990s), when many holdings hid in their "snail shell", constitutes a certain exception (Figure 2).

The marketability of global plant production is much lower than that of animal production primarily because of livestock fodder (to a lesser extent of seed potatoes, seed and household consumption). A shift to animal production technologies based on purchased fodder raises the marketability index for plant production. In 1950-2015, the marketability index for plant and animal production increased respectively from 23 to 67% and from 51 to 91%. The marketability index for final production follows a similar trend, with insignificant intersectoral differences resulting from consumption subsistence.

Figure 2. Marketability of individual agriculture in 1950-2015 (%)



CP – commodity production; GP – global production; FP – final production
Source: Study based on CSO data.

[37] Global agricultural production includes plant production (annual harvest) and animal production (including an increase in breeding and slaughter cattle, pig, sheep, poultry and horse livestock). Final production is global production minus own-produced products used for production purposes (fodder, seed, manure,...). Commodity production is the value of sales of agricultural products. Furthermore, there is the category of net commodity production which is commodity production minus the value of products of agricultural origin purchased on the market by agricultural producers. The category of marketability, which takes into account production subsistence, is the net marketability index.

Long time ago, production subsistence in peasant agriculture used to be practically the only source of means for current production purposes (seeds, seed potatoes, animal breeding, fodder, organic fertilisers). Over time, as agricultural production technology and the organisation of holdings changed and as agricultural innovations were introduced, the importance of subsistence diminished. Production subsistence in the case of poultry and pigs was almost completely eliminated. Nowadays, most means of production are bought.

The commercialisation of production is accompanied by a downward trend in the share of natural consumption in total food consumption – down from 46% in 1950 to 4% in 2015, while the share in households of farmers was 24%. The share for potatoes was respectively 21% and 77%, while for meat – 5% and 35% (calculated based on quantitative data). It is interesting to observe that the share of consumed food for subsistence purposes in households of farmers varies by area of their agricultural holdings: in total – 24%, under 1 ha – 17%, 1-5 ha – 22%, 5-10 ha – 23%, 10-15 ha – 25%, 15-20 ha – 26%, and at least 20 ha – 21% (data for 2014).

The situation of natural consumption (subsistence) changed with the political transformation. First of all, the opening of the domestic market extended the commercial offer. This breath of abundant, attractively packaged, relatively inexpensive food products made consumers choose them by looking often just at their packaging, with little regard for quality or nutritional value. The downward trend in importance (of subsistence) will continue as it is how cultural trends work, in particular an increase in out-of-home consumption, in ready-to-eat products, in women's professional and social activity. Nevertheless, increasingly challenged industrial food and an increasing awareness of the relationship between food quality and health increase interest in organic food and food as to which we can be sure about their method of manufacturing. There is thus distrust of food of anonymous origin, especially in large retail chains, and interest in food available in local food systems, including food delivered via a system of direct sales.

Concentration in agriculture of the industrial age was to encourage the economic motivation of peasants and to integrate them into the orbit of the market. Concentration in agriculture encompasses numerous aspects: increasing the size of agricultural holdings (production potential), farmland, animal herds and spatial production. Of course, the concentration of production potential, which used to refer generally to land, but which increasingly refers at present to capital as well, is paid the greatest attention. The concentration of production potential was to contribute to production scale-up, i.e. achieving economies of scale. Capital in the form of industrial means of production flowed into agriculture, while

breaking down the pre-capitalist regularity of inverted productivity (inversion), i.e. the larger the agricultural holding, the lower the land productivity. Along with unquestionably higher labour productivity on larger holdings, it encouraged and even necessitated land concentration. This necessity still exists, because capital enslaved agriculture, pushing agricultural holdings into the technological treadmill. External pressure is exerted by industrial corporations and large retail chains forcing agribusiness enterprises to lower prices, with effects being passed on to the weakest link of vertical agri-food chains, i.e. farmers – forcing them to pursue concentration and production scale-up. It is usually accompanied by more capital-intensive and more expensive technologies which reduces economic surplus per product unit left for a farmer. This surplus can only be increased through production scale-up or extensification, thus increasing labour productivity, but decreasing land productivity. At the same time, the need for competitiveness involves a greater emphasis on supporting holdings capable of competition on the globalising agri-food market. These relationships have neglected non-commercial social and environmental effects of the concentration process so far. However, the need for their internalisation is becoming actually urgent. It is a strong argument in favour of a new approach to concentration.

Concentration in agriculture, which involved increasing the size of holdings and production, was a response to challenges of the market, being also subject to the law of concentration with the development of urban areas and industrial districts. It led to a whole series of phenomena: increased supply of food products – concentration of agri-food processing – concentration and specialisation in agriculture. Concentration generated economies of scale of which peasant holdings were devoid. The Marxist law of concentration, according to which great production displaces small production due to technical progress, was the crowning argument of critics of peasant agriculture. While pointing that large holdings prevail over small ones, K. Kautsky wrote in this respect that: *There is no doubt that the contemporary development of agriculture provides more ancillary, scientific and technical means to large holdings so that they can remain superior in any respect – as already mentioned – through specialised training of their personnel* [Kautsky 1958, p. 147].

Land is crucial to the concentration process. Economic arguments in favour of land concentration can be put down to: 1) labour productivity growth which makes it possible to transfer labour force from agriculture to sectors of higher productivity, while contributing to accelerating overall economic growth, i.e. well-being; 2) strong stimulation to implement technical progress (mechanisation, chemicalisation, specialisation); 3) effective use of technology (problem of over-invested small agricultural holdings); 4) lower emphasis on decreasing

unit costs which is important to economic competitiveness; 5) laying foundations for increasing the income of the agricultural population. Benefits of concentration for agricultural holdings are synthetically referred to as "economies of scale of production". Capitalist concentration in agriculture is specific, as it can only take place through centralisation – concentration of many holdings into one holding – due to the limitation of land. To form one large holding, numerous small ones have to fall and their scattered fields have to be merged.

In a more distant past, the area of a holding was conditional mainly on labour resources of a peasant (generally multi-generational) family. Labour resources of a family were sometimes assisted by employed workers (farm workers, crofters, landless tenants, etc.). Over time, growing population density and emerging manorial farms led to land scarcity. Subsequently, economic factors and technical progress were becoming increasingly important in determining the area of holdings. The former covered the need for competitiveness caused by market relations, and economic needs of agricultural holdings and a family. The latter included innovations whose implementation was necessary to meet economic challenges which, apart from production scale-up, also required lowering unit costs of production.

In the interwar period, arguments in favour of land concentration stressed existential needs of a family. After all, it is completely understandable, since agriculture was the only livelihood for the majority of the population. It was all about having the area of a holding large enough to maintain a family – ensure its existence at least at a minimum level – which was estimated at a wide range of 4-15 ha depending on family size, soil quality, a region. It was about 8-10 ha in the 1970s and more in the 1980s, i.e. 10-20 ha, and it is 20-30 ha at present depending on whether the actual income of families, for whom agriculture is the main livelihood (so-called households of farmers), or the so-called parity income (i.e. the ratio of *per capita* income in households of farmers and households of employed workers) is taken into account. Under conditions of the commercialisation of production and the emergence of the imperative of accumulation also in agriculture, parity income ceases to be the main premise of the area of a holding which is now the imperative of capital accumulation. It becomes important that a larger area and generally larger production potential of a holding increases a farmer's manoeuvrability with respect to the need for competitiveness and the further development of his holding.

Land and production concentration accompanying the capitalist transformation of agriculture, which solved the agrarian question in developed countries (farmerisation of agriculture), did not take place in Poland: in pre-war Poland due to overall economic underdevelopment which could not create conditions

for transformation (elimination of agrarian overpopulation), while in the People's Republic of Poland due to the doctrine of agricultural socialisation. Its effects were particularly evident until the 1980s when agricultural land acreage in socialised agriculture (great estate) increased by about 125% compared to 1950, while in non-socialised agriculture (more specifically – family holdings) decreased by 23%. Nevertheless, there was also slow land concentration in family agriculture. The concentration of family agriculture in the period of the political transformation was hindered by the income and employment barrier. Accession to the European Union itself eliminated these barriers and created conditions for concentration.

The agrarian structure of Polish agriculture is subject to changes which have followed two trends for several decades, i.e. a decrease in the absolute number of holdings and the polarisation of the area structure (Table 6).

Table 6. Individual holdings[a] by UAA (by area group) in selected years

Years	In total		1-2		2-5		5-10		10-15		≥15[d]	
	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%
1950[b]	2 762	100	415	15.0	992	35.9	976	35.4	246	8.9	133	4.8
1960	2 938	100	523	17.8	1 092	37.2	938	31.9	284	9.7	101	3.4
1970	2 726	100	370	13.6	1 030	37.8	919	33.7	316	11.6	91	3.3
1980	2 390	100	448	18.7	884	37.0	716	30.0	240	10.0	102	4.3
1987	2 235	100	418	18.7	778	34.8	657	29.3	249	11.2	133	6.0
1990	2 138	100	378	17.7	751	35.1	637	29.8	242	11.3	130	6.1
1996	2 041	100	462	22.6	668	32.7	521	25.5	217	10.6	174	8.5
2002	1 952	100	517	26.5	629	32.2	427	21.9	183	9.4	196	10.0
2002[c]	1 618	100	351	21.7	509	31.3	393	24.4	175	10.8	190	11.8
2010[c]	1 481	100	301	20.4	489	33.0	346	23.4	151	10.2	193	13.0
2013[c]	1 391	100	278	19.8	455	32.9	315	22.6	141	10.2	202	14.5

[a] engaged and not engaged in agricultural activity; [b]area groups: 10-14 ha and at least 14 ha; [c] engaged in agricultural activity; [d] data availability does not allow for the disaggregation of this group in a time series
Source: CSO data.

Changes in the agrarian structure mirror an agricultural policy. The 1950s were marked by the increasing fragmentation of holdings which was overcome in the next decade[38]. The polarisation of the agrarian structure was evident in the following decades[39]. In the 1970s, making the policy "more relaxed" towards

[38] The upward trend in the number of agricultural holdings was "overcome" in the mid-1960s when the number of individual holdings, including plots, was about 3.6 million (about 650 thousand plots) [Zegar 2000].
[39] Dual occupation, which improved the material standing of agricultural families from small holdings, but which inhibited structural changes, especially in 1950-1960, was important to agrarian changes.

family agriculture reversed a downward trend in the number of holdings of at least 15 ha. Since the 1980s, given a decrease in the total number of holdings by 1/4, the number of holdings in all the area groups of up to 15 ha has decreased, but the number of holdings of at least 15 ha has doubled.

Changes in the number and structure of holdings are accompanied by analogues changes in UAA (Table 7)[40].

Table 7. UAA in area groups of individual holdings[a] in selected years

Years	In total		1-2		2-5		5-10		10-15		≥15	
	'000 ha	%	'000 ha	%	'000 ha	%	'000 ha	%	'000 ha	%	'000 ha	%
1950[b]	16 265	100	593	3.7	3 309	20.3	6 914	42.5	2 815	17.3	2 634	16.2
1960[b]	16 499	100	756	4.6	3 646	22.1	6 637	40.2	3 377	20.5	2 083	12.6
1970	14 010	100	555	4.0	2 883	20.6	5 599	40.0	3 111	22.1	1 862	13.3
1980	13 654	100	683	5.0	2 962	21.7	5 125	37.6	2 896	21.2	1 988	14.5
1987	13 614	100	616	4.5	2 598	19.1	4 691	34.5	3 010	22.1	2 699	19.8
1990	13 400	100	564	4.2	2 536	18.9	4 591	34.2	2 996	22.4	2 713	20.3
1996	14 260	100	651	4.6	2 199	15.4	3 713	26.0	2 632	18.5	5 065	35.5
2002	14 462	100	725	5.0	2 038	14.1	3 029	20.9	2 214	15.3	6 456	44.6
2002[c]	13 304	100	496	3.7	1 672	12.6	2 800	21.0	2 125	16.0	6 201	46.7
2010[c]	13 194	100	441	3.4	1 599	12.1	2 466	18.7	1 838	13.9	6 850	51.9
2013[c]	13 237	100	404	3.0	1 477	11.2	2 227	16.8	1 708	12.9	7 421	56.1

[a] engaged and not engaged in agricultural activity; [b] approximate data on UAA; area group in 1950: 10-14 ha and at least 14 ha; [c] engaged in agricultural activity
Source: CSO data.

Having compared the data in Tables 5 and 6, it can be concluded that there is an evident upward trend in the share of holdings of at least 15 ha in the agrarian structure and an even faster upward trend in the share in relation to UAA. This group of about 200 thousand holdings, which cover 56% of UAA, is also subject to significant changes. The number of holdings of 15-30 ha is slowly decreasing, while the number of holdings of 30-50 ha and of at least 50 ha is increasing. In 2002-2013, the number of holdings of at least 15 ha increased by 6%, while the number of holdings of 15-30 ha decreased by 8%, of 30-50 ha increased by 33%, while of at least 50 ha – by 81%. In the same period, the UAA of holdings of at least 15 ha increased by 19%, while changes in the specified groups were respectively: -6%, +35% and +46% (Table 8). The structure of holdings is thus subject to polarisation, but covers a much larger area than in the years of the People's Republic of Poland.

[40] The omission of non-agricultural holdings is of some importance particularly to the number of holdings. In 2010, for instance, there were 79 thousand non-agricultural holdings (5.1%) of at least 1 ha which covered 489 thousand ha of UAA (3.6%).

Table 8. Individual holdings of at least 15 ha of UAA in selected years

Years	Holdings (number)				UAA (ha)			
	In total	15-30	30-50	≥50	In total	15-30	30-50	≥50
				'000				
1996[a]	173.6	145.1	19.6	8.9	5 065.0	2 852.7	719.3	1 493.0
2002[a]	196.4	147.9	31.4	17.1	7 129.0	2 794.4	1 171.8	3 162.8
2002[b]	190.5	143.8	30.5	16.2	6 211.1	2 893.2	1 136.8	2 181.1
2010[b]	192.8	132.8	35.7	24.3	6 850.2	2 708.3	1 344.6	2 797.3
2013[b]	202.2	132.4	40.5	29.3	7 421.6	2 710.2	1 536.6	3 174.8
				%				
1996[a]	100.0	83.6	11.3	5.1	100.0	56.3	14.2	29.5
2002[a]	100.0	75.3	16.0	8.7	100.0	39.2	16.4	44.4
2002[b]	100.0	75.5	16.0	8.5	100.0	46.6	18.3	35.1
2010[b]	100.0	68.9	18.5	12.6	100.0	39.6	19.6	40.8
2013[b]	100.0	65.5	20.0	14.5	100.0	36.5	20.7	42.8

[a] engaged and not engaged in agricultural activity; [b] engaged in agricultural activity
Source: Study based on CSO data.

The increase in the number and UAA of holdings of 30-50 ha and of at least 50 ha, which takes place in the period of the political transformation and European integration, is significant. Nevertheless, the area structure of Polish agriculture still differs from that in countries with which Poland competes on the single European market. For instance, the share of holdings of at least 50 ha of UAA in the total number of holdings in Poland is only 1.8% and they cover 29.5% of UAA, while in the EU-15 – respectively 12 and 70%, and in the EU-27 – 6 and 66% (2010)[41].

Land concentration is usually accompanied by economic concentration which is construed as increasing production volumes (production scale-up). In fact, land is strongly correlated with capital concentration and less strongly – due to capital and labour substitution – with labour input concentration. In fact, relations between them somewhat loosened, in particular with respect to animal farms and greenhouse crops, but they are still statistically significant. Industrial means of production make production scale-up possible without increasing the area of holdings. Poultry farms and pig farms, which are based on purchased fodder – often imported from distant production sites, are one example of such economic concentration.

Economic concentration embodies effects of land concentration, specialisation, intensification and economies of scale. It used to be measured in the European Union by using the so-called standard gross margin expressed in ESUs and it is currently measured by using standard output expressed in EUR. The

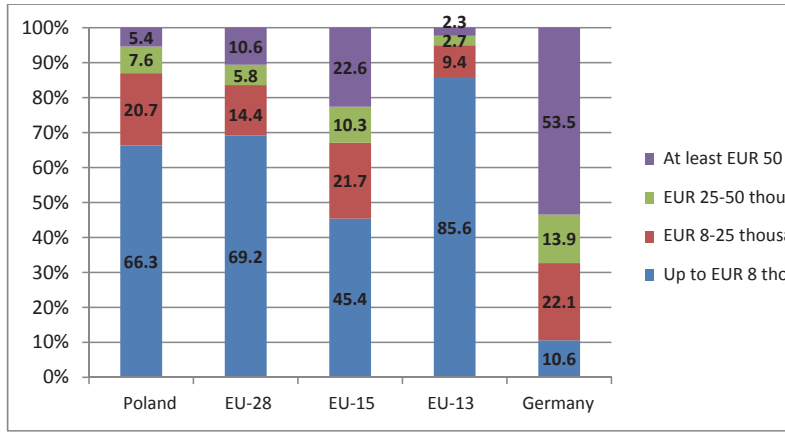
[41] Calculated based on [Jankowska 2015, Tables 33 and 34].

structure of holdings by economic strength is important, as it synthesises the agrarian structure as well as the intensity and efficiency of agricultural production. The economic size of holdings is conditional on livelihoods of families related to agricultural holdings and their ability to accumulate funds for development-oriented investment as well as market competitiveness. It is generally accepted that the greater the economic strength of a holding, the better, i.e. in terms of the economic structure – the higher the share of holdings of higher economic strength, the better. It is true in general. Two issues arise here. The first one is a trend to increase the economic strength of a viable agricultural holding. The viability of an agricultural holding can be construed as its ability to generate income high enough to maintain a family (preferably at the parity level) and its ability to develop or to compete. The parity level as well as developmental needs and the need to face competition make economic strength rise constantly. As regards income, the situation is less acute, because agricultural holdings and agricultural families are highly adaptable – resilient to periodic difficulties, whereas – in the case of competitiveness – the maxim "run or die" applies with full force. However, the second issue concerns the concentration of holdings by economic strength determined by the share of holdings of different economic strength. As individual holdings operate in various environment, there is no single optimum for all of them.

In 2002-2013, the number of family holdings (>1 ha of UAA) fell by over 220 thousand (by 14%), with an absolute increase in the number of holdings with standard output of over EUR 25 thousand. In this respect, Poland remains far behind EU Member States, in particular its neighbour – Germany (Figure 3).

Concentration processes occurred in the agricultural environment as well, leading directly to vertical integration – the formation of agribusiness which became a meta-system in relation to agriculture, subordinating it to its interests. In some countries, farmers sought to strengthen their position by – apart from concentration – cooperation (horizontal integration), including the establishment of cooperatives of various types. However, it generally did not strengthen their position significantly, as concentration and consolidation take place in leading cells of agribusiness as well – even faster than in agriculture. Additionally, leading forces change: transnational – industrial and commercial – corporations displaced local and national enterprises.

Figure 3. Structure of agricultural holdings by economic size group in 2013 in the EU, specifically in Poland and Germany (holdings in total = 100)



Source: Compiled based on [Sikorska, 2015, p. 146, Table A.6].

Concentration, which is automatically accompanied by migration from agriculture, is considered as fundamental to increasing labour productivity and income. Concentration brings obvious economic benefits, especially in terms of labour productivity and unit costs of production, if it does not exceed a certain level[42]. Most effects of labour productivity growth in agriculture are taken over by others – all the more in the era of globalisation, i.e. corporations' omnipotence. Farmers are under an illusion, which is made even more intense by the neo-liberal thought, that the agrarian question can be solved by accelerating concentration. It will indeed be solved, but not the way they hoped for. Such a solution, however, involves the abolition of not only peasants, but also family holdings.

The concentration of production potential creates favourable conditions not only for production concentration, but also for **specialisation**. The latter is conditional primarily on economic factors: demand and profitability – with prices, which have been market-driven (increasingly by the single European market and the global market) since the beginning of the political transformation – being decisive. Sectoral changes in agricultural production (plant and animal production) and animal production technologies are, of course, important. Specialisation allows for production scale-up which is essential for economics – efficiency and profitability. Specialisation facilitates the concentration of crops (crop area) and the herd size of farmed animals. In the case of crops, it is reflected in a changed crop structure and an increased area of individual crops, while

[42] It is due to side effects of concentration, in particular on environmental protection.

in the case of animal production – in the share of holdings keeping individual livestock species and the share of animals in larger herds.

The crop structure reflects the effect of various forces influencing an agricultural holding. Changes in the crop structure (and area) are significant. In particular, there is a decline in the production of rye and potatoes (diminishing importance as fodder and lower profitability compared to other crops), an increase in the production of grain maize as well as rape and turnip rape (demand, profitability). The changes in the crop production above are significant, yet not as spectacular as in cereal blends (fodder for a concentrated population) and wheat (oilseed competition, foreign producers' competition), while the area of vegetable production is relatively stable which can be attributed to progress in vegetable yields and the variable profitability of vegetable production (Table 9).

Table 9. Area of specific crops grown on individual holdings in selected years ('000 ha)

Specification	1960	1970	1980	1990	1996	2002	2010	2015
Crops in total	13 294	12 568	10 995	10 930	10 684	9 651	9 107	9 679
Wheat	1 151	1 555	1 277	1 698	2 025	2 040	1 757	2 051
Rye	4 714	3 075	2 547	1 969	2 204	1 478	996	684
Cereal blends for grain	215	397	656	1 131	1 233	1 352	1 087	810
Maize for grain	17	4	5	26	36	88	243	564
Potatoes	2 656	2 505	2 127	1 690	1 320	790	358	279
Rape and turnip rape	47	169	75	138	140	284	661	725
Ground vegetables	174	239	240	235	230	172	132	147

Source: CSO data.

Table 10. Concentration of specific crops grown on individual holdings of over 1 ha of UAA in 1996 and 2013

Specification	Area (ha) of a holding by crop			Degree of concentration (%)[a]		
	1996	2013	Change (%, 1996 = 100)	1996	2013	Change (percentage points)
Cereal	4.05	6.35	157	35.0	53.4	18.4
Potatoes	0.76	0.64	84	1.2	23.7	22.5
Sugar beets	1.49	3.18	213	9.7	30.0	20.3
Rape and turnip rape	5.15	7.91	154	52.9	64.8	11.9
Orchards	0.56	2.00	357	11.0	34.6	23.6
Field vegetables	0.13	1.38	1061	11.6	52.6	41.0
Strawberries	0.15	0.91	667	0.6	38.8	38.2

[a] the degree of concentration was assumed to be the share of a crop area of at least 10 ha in the total area (at least 5 ha for field vegetables and strawberries)
Source: Calculated based on CSO data.

With regard to animals, there is a long-standing downward trend in the population of cattle (including cows), a sharp downward trend in the population of sheep (since the mid-1980s) and horses. In recent years, a downward trend has been also observed for swine. Taking into account the four main animal species (cattle, pigs, sheep and horses) in livestock units, their population fell in 1980-2010 by as much as 40%. The downward trend in the population of cattle and horses, and stabilisation – with significant fluctuations – in the population of pigs are important to population scale changes (Table 11).

Table 11. Livestock kept on individual holdings in selected years ('000 LUs)

Specification	1950	1960	1970	1980	1990	1996	2002	2010	2015
Cattle	6 798	7 697	8 964	9 212	8 320	6 595	5 226	5 400	5 648
Cows	4 645	5 340	5 411	5 098	4 362	3 269	2 739	2 499	2 315
Pigs	8 758	11 285	11 734	15 281	13 948	15 439	17 133	13 099	9 182
Sheep	2 047	3 228	2 682	2 642	2 781	427	311	239	212
Horses	2 660	2 610	2 493	1 741	917	555	321	247	200[b]
Chicken poultry	.	.	.	71 696	43 250	47 147	43 323	115 112	117 590
Livestock units (LUs[a])	7 052	11 345	12 033	11 614	9 888	8 181	7 113	6 551	6 112
LUs/100 ha of UAA	39	64	76	82	70	54	48	50	46

[a] cattle, pigs, sheep, horses; [b] 2013
Source: CSO data.

With regard to cattle, including cows, holdings increasingly opt out of their breeding. Twenty years ago, 70% of holdings were engaged in cattle rearing, including 66% of holdings in cow rearing, while in 2013 – respectively 30 and 26% of holdings[43]. Market requirements and competition made holdings opt out of keeping cattle in general and cows in particular even faster and accelerated population concentration on holdings keeping at least 10 heads. In 2013, such herds included over 2/5 of the population of cattle and over 7/10 of the population of cows in individual agriculture (Table 12). However, the concentration of cow rearing in Poland is significantly lower than in other EU Member States. In 2010, the average herd in Poland included 6 cows, in Hungary – 22 cows, in Germany – 46 cows, in Denmark – 132 cows, and in the Netherlands – 75 cows [Ziętara and Adamski 2014, p. 113][44].

[43] In 1950, 18.2% of individual holdings did not keep cows, while in 1960 – 22.7%. In 1950, 40% of holdings had 1 cow and 30% – 2 cows, while in 1960 – it was respectively 37 and 28%.
[44] In 2010, the share of cows in herds of at least 50 heads in Poland was only 13%, while in Germany – 65%, in the Netherlands – 89%, and in Denmark – 93%.

Table 12. Some data on the population of cattle and cows in selected years

Year	Population ('000 head); as at June		Share of the population on individual holdings	Share of holdings with no population	Share of the population on holdings with (%)		
	Agriculture in total	Individual holdings			1-2 heads	3-10 heads	at least 11
Cattle							
1987	10 523	8 512	80.9	31.8	12.6	58.9	28.5
1990	10 049	8 320	82.8	29.5	11.7	58.6	29.7
1994	7 696	7 026	91.3	30.1	13.6	54.5	31.9
1996	7 136	6 595	92.4	35.7	13.1	46.5[a]	40.4[b]
2000	6 083	5 734	94.3	41.0	12.7	39.4[a]	52.1[b]
2005	5 483	5 160	94.1	68.4	9.9	26.9[a]	63.2[b]
2010	5 761	5 419	94.1	72.2	5.0	17.2[a]	77.8[b]
2013[c]	5 860	5 560	94.9	69.6	3.2	13.5[a]	83.3[b]
Cows							
1987	4 937	4 295	87.0	34.3	43.8	55.9	0.3
1990	4 919	4 362	88.7	31.5	43.1	56.4	0.5
1994	3 863	3 626	93.9	32.3	46.3	53.3	0.4
1996	3 461	3 269	94.5	38.4	36.6	48.4[a]	15.0[b]
2000	3 098	2 955	95.4	43.9	33.3	44.6[a]	22.1[b]
2005	2 795	2 648	94.7	70.5	23.5	29.1[a]	47.4[b]
2010	2 657	2 510	94.5	76.0	14.0	20.4[a]	65.6[b]
2013[c]	2 530	2 403	95.0	74.5	10.7	17.9[a]	71.4[b]

[a] 3-9 heads; [b] at least 10 heads; [c] holdings of over 1 ha
Source: CSO data.

Following systemic changes, the concentration of milk production in Poland increased. The number of cow holdings fell from 1 309 thousand in 1996 to 363 thousand in 2013, while the number of wholesale milk suppliers – from 311 thousand in 2004/2005 to 145 thousand in 2012/2013, and milk production per 1 supplier doubled [Ziętara and Adamski, 2014, p. 113]. The income of dairy holdings, just like that of holdings of other types, is increasingly dependent on operating subsidies[45]. The concentration of milk production is important to competitiveness. It was found that Polish dairy holdings with a higher scale of production, according standard output value, keeping over 35 dairy cows with a productivity of 6 500 kg of milk, had developmental potential and were competitive compared to similar dairy holdings from other EU Member States [Ziętara and Adamski 2014, p. 114].

[45] The share of subsidies in the income of holdings in Poland was 40-50%, in Hungary – 75-82%, in Germany – 80-90%, in the Netherlands – 92-121% [Ziętara and Adamski 2014, p. 111, Table 6].

Similarly to cattle, pigs are subject to changes as well: holdings increasingly opt out of pigs rearing and their population is transferred to holdings with larger herds. In 2013, nearly 3/4 of pigs were kept on holdings with herds of over 50 heads. Twenty years earlier, it was 1/8 (Table 13).

The concentration of livestock on ever fewer holdings will continue. All the more so since the concentration (scale of production) of pigs in Poland is lower than in other EU Member States.

Table 13. Some data on pigs rearing in selected years

Year	Pigs – '000 heads; as at June[a]		Share of the population on individual holdings	Share of pig holdings	Share of pigs on holdings with			
	Agriculture in total	Individual holdings			1-2 pigs	3-10 pigs	11-50 pigs	≥50 pigs
1987	18 546	13 227	71.3	59.9	7.1	27.6	52.9	12.4[d]
1990	19 464	13 948	71.7	62.7	6.6	23.7	54.0	15.7[d]
1994	19 446	16 759	86.1	59.5	3.3	16.8	50.5	29.4[d]
1996	17 964	15 439	85.9	50.3	2.9	12.4[b]	46.6[c]	41.0
2000	17 122	15 447	90.2	46.4	2.1	8.5[b]	39.3[c]	50.1
2005	18 112	16 044	88.6	28.3	1.7	6.4[b]	34.2[c]	57.7
2010	15 278	13 133	86.0	21.0	1.1	4.2[b]	24.7[c]	71.0
2013	11 162	8 964	80.3	19.9	1.0	3.7[b]	21.9[c]	73.4

[a] since 2000 – as at July; [b] 3-9 heads; [c] 10-49 heads; [d] at least 51 heads
Source: Study based on CSO data.

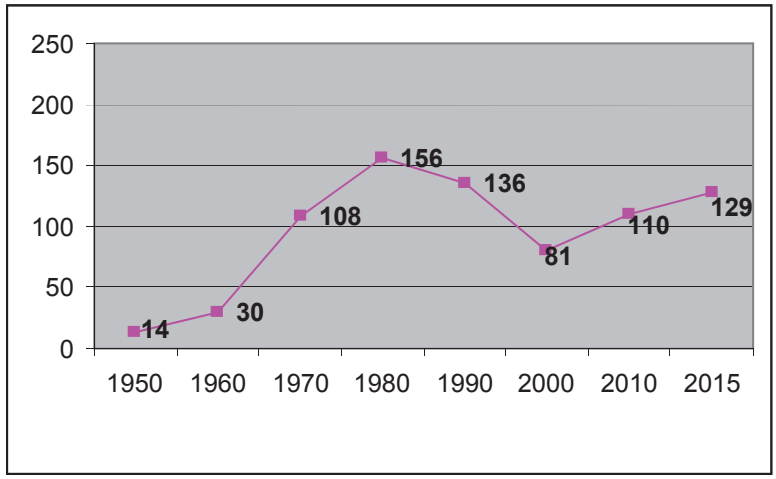
The increasing demand for agricultural products and the need for money stimulated and even forced farmers to increase production by **intensification** farming through organisational changes – a more intensive production structure – to better use resources of family labour as well as through increasing inputs of industrial (purchased) means of production. It is particularly about chemical fertilisers, plant protection chemicals, industrial fodder and agricultural technology. Capital was thus provided with opportunities for expansion and accumulation in agriculture. The demand of agriculture for agricultural production inputs and of the agricultural population for consumer goods was very important in the first phase of industrialisation, if only because of the dominance of agriculture and the agricultural population in the socio-economic structure. However, it also contributed to increasing crop yields as well as the population and productivity of livestock.

The use of mineral fertilisers directly influencing yields and plant protection chemicals were among the most important yield-increasing factors. In the years of the Second Republic, mineral fertilisation was mainly used by great estate holdings; such fertilisers were barely used on peasant holdings: in the mar-

keting year of 1924/25, mineral fertilisation was only 4.3 kg in a pure component per 1 ha of UAA (6.6 kg per 1 ha of crops), in 1929/30 – 6.6 kg (10.0 kg) and in 1937/38 – 4.9 kg (7.1 kg) [GUS 2012, p. 340, Table 39(335)][46]. In the post-war period, i.e. in the 1960s and the 1970s, the use of artificial fertilisers was encouraged (agrominimum programme) which, together with obvious benefits of increased yields, led to increased fertilisation, albeit much lower than in Western European countries. The use of mineral or chemical fertilisers in a pure component per 1 ha of UAA increased significantly, as illustrated in Figure 4 for 10-year periods. In 2002, mineral fertilisers were used by 74% of individual holdings of over 1 ha of UAA, in 2010 – 66%, and in 2013 – 74% once again. The absolute number of holdings using mineral fertilisers is decreasing, so is the total number of individual holdings, i.e. in 2002 – 1 440 thousand, in 2010 – 1 248 thousand, and in 2013 – 1 003 thousand. Opting out of livestock rearing by holdings leads also to a decline in the share of holdings using organic fertilisers of animal origin – from 59% in 2002 to 47% in 2010 and 48% in 2013.

Higher yields contributed to increasing harvest, in particular of cereal – an agricultural product crucial to food safety. It was accompanied by a decline in UAA, in particular crop area.

Figure 4. Use of mineral (or chemical) fertilisers per 1 ha of agricultural land (kg of NPK)[a]



[a] in the 1950s and the 1960s, individual holdings, including production cooperatives

Source: Study based on CSO data.

[46] GUS (CSO) – Central Statistical Office.

The increased use of purchased means of production, including imported cheap fodder, increasingly efficient agricultural machinery and equipment, and agricultural (agrobiological) progress facilitated the spread of agricultural calculations – an economic calculation of costs and benefits. The calculation justified the need for a simplified structure and then for specialised agricultural holdings.

2. Productivity of family holdings

The productivity of family holdings can be considered in the context of food safety – a sufficient volume of manufactured agri-food products, economic effectiveness, competitiveness and sustainability. All these contexts are relevant to the agrarian question. The first one is primarily about land productivity, the second one – about the relation of productivity with efficiency (profitability), the third one – about the relation with competitiveness, and the fourth one – about the relation with sustainability.

When considering land productivity in the context of food safety, the volume of agricultural production per 1 ha of UAA is most important, while in the context of economic effectiveness – the gross value added is more important which is also relevant to competitiveness. Apart from holdings of up to 1 ha of UAA whose performance is significantly influenced by animal farms and vegetables grown under plastic sheeting, there is a relation similar to a very flattened parabola – the highest land productivity is recorded in middle area groups: 15-50 ha. Land productivity on holdings of up to 15 ha is lower, being even lower on holdings of over 50 ha (Table 14). There is a certain change compared to pre-industrial agriculture, because the relation was hyperbolic back then.

Table 14. Land and labour productivity in individual holdings by area group in 2010 (EUR '000)

Specification	Up to 1	1-5	5-15	15-25	25-50	50-100	≥100
SO/1 ha	4.20	1.26	1.27	1.30	1.36	1.20	0.99
SGM/1 ha	0.96	0.46	0.59	0.71	0.68	0.56	0.41
SO/1 AWU	3.63	3.58	7.40	14.06	22.16	37.88	62.51
SGM/1 AWU	0.96	1.56	4.08	8.64	13.44	21.36	30.96

SO – standard output; SGM – standard gross margin; AWU – annual work unit equivalent to full-time employment (2 200 h per year)
Source: Study based on data from the National Agricultural Census 2010.

Giving priority to labour productivity, which strongly stimulated the concentration of production potential and the scale of production, was an important feature of industrialisation. The larger the holding, the higher the labour productivity measured by using both standard output and the standard gross margin.

The traditional measure of partial productivity (productivity of individual factors of production) and total productivity (productivity of all factors of production – TFP) is insufficient for effectiveness as well as for competitiveness and sustainability. It is due to the currently realised multifunctionality of agriculture consisting in providing goods and services, which are important to social well-being, not subject to transactions, i.e. market valuation, thus criteria for micro- and macroeconomic effectiveness (optimality), and private and social effectiveness. While the first one takes into account inputs and products subject to market valuation, the second one takes into account also externalities related to the manufacturing of market products.

3. Socio-economic structure

Socio-economic mechanisms of civilisation development bring about an absolute, even relative, decline in the agricultural population to be construed here as people living mostly from agricultural income (agricultural holding)[47]. As non-agricultural sectors developed slowly, the agricultural population in the pre-war period even increased, although its share in the total national population decreased slightly. In the post-war period, however, the industrialisation of the country enabled a significant decline in the agricultural population, both in absolute and relative terms. For many reasons, it was not followed by a further decline in the number of agricultural holdings which increasingly ceased to be the main livelihood for people related to them. Long-term trends in the agricultural population are presented in Table 15.

A downward trend in the agricultural population is also reflected in the case of households with a user of an agricultural holding. There are significant differences between individuals and families (households) with specific livelihoods. Family agriculture in Poland is losing its importance as the primary livelihood for the population, following the example of highly developed countries. However, slow changes in the agrarian structure lead to a decline in the share of agricultural families, for whom an agricultural holding is the main livelihood, in the general population of households with a user of an agricultural holding. It is so due to the intensification of dual occupation and the social security system in individual agriculture. Dual-occupation holdings serve as a place of residence, a source of extra income and ever less frequently a source of food products. As regards households of people living from social benefits, an agricultural holding

[47] There is no single, universally accepted definition of the agricultural population. Depending on a criterion for differentiating this population, its size differs significantly. It is illustrated in detail based on data from National Agricultural Censuses 1996 and 2002 (cf. [Zegar 1999 and Zegar 2006]).

serves the same purposes (a place of residence and a source of income) and sometimes it results from necessity – e.g. when an elderly user has no successor or no one willing to buy his holding. Trends in this area will continue, albeit at a slower pace.

Table 15. Agricultural population by main livelihood

Years	Total population ('000 000 people)	Agricultural population by main livelihood ('000 000 people)	Agricultural population in % of the total population	Agricultural population per 100 ha of UAA (people)
<WW I	29.3	19.3	65.9	78.1
1921	27.4	17.9	65.0	71.2
1931	31.9	19.6	61.4	76.5
1938	34.6	21.1	61.0	81.5
1950	25.0	11.8	47.2	56.9
1960	29.8	11.3	37.9	57.7
1970	32.6	9.7	29.8	49.7
1978	35.1	8.2	23.4	43.5
1988	37.9	6.7	17.7	35.8
1996	38.3	3.7	9.7	20.0
2002	38.2	3.0	7.9	17.8
2010	38.5	2.4	6.3	16.4
2013	38.5	2.2	6.0	15.3

Source: [Gorzelak 2010. p. 92, Table R.7.1]; for 2010 and 2013, own estimate based on CSO data.

Table 16. Family holdings of over 1 ha of UAA by socio-economic group in selected years

Groups of holdings	Number ('000)				Structure (%)			
	1996	2002	2010	2013	1996	2002	2010	2013
I	764.1	584.2	505.3	492.4	38.5	39.2	34.6	35.4
II	55.7	24.8	12.2	12.7	2.8	1.7	0.8	0.9
III	523.9	410.7	457.1	458.5	26.4	27.5	31.3	33.0
IV	58.0	69.4	138.2	104.1	2.9	4.7	9.5	7.5
V	416.5	377.2	223.7	182.2	21.0	25.3	15.3	13.1
VI	22.1	24.4	18.7	21.6	1.1	1.6	1.3	1.6
VII	146.7	127.2	104.0	119.5	7.4	8.5	7.1	8.6

I – households of farmers, II – dual-occupation households, III – households of employees and dual-occupation households, IV – households of the self-employed outside agriculture, V – households of retirement and disability pensioners, VI – other non-wage households, VII – other households (including those with an unknown livelihood)

[a] holdings engaged in agricultural activity (as regards holdings in total, data for 1996 concern all holdings – both engaged and not engaged in agricultural activity)

Source: Study based on CSO data.

Table 16 presents changes in livelihoods of households with a user of an agricultural holding determined based on data from the last three national agricultural censuses and a structural survey in 2013. The CSO's socio-economic groups of households were used.

In 1996-2013, the number of agricultural holdings of over 1 ha of UAA dropped by 30%, while the number of agricultural holdings, which were the main livelihood for a family (household), fell by 36%. Other agricultural holdings belong to families for whom employed labour is the main livelihood (their share is systematically growing) and, to a much lesser extent, to families for whom self-employment outside agriculture is the main livelihood. However, an interesting group includes retirement pensioners covered by the KRUS[48] system, whose number is decreasing faster than the number of holdings after growth in the first half of the 1990s. In 1995-2016, the number of farmers covered by the retirement pension system fell by over 2/5, while the number of individual holdings (of over 1 ha of UAA) dropped by about 1/3. During this period, the number of people receiving their agricultural retirement pension fell by 26% (respectively from 1 258 thousand to 934 thousand). The number of disability pensioners – farmers receiving their disability pension for incapacity for work – is decreasing even faster. In 1990-2000, their number increased by 80% (from 441 thousand to 794 thousand) and next decreased by 73% (to 216 thousand).

To have a complete picture, microholdings of up to 1 ha need to be taken into account as well when assessing changes in the socio-economic structure of households (population) in family agriculture. According to the National Agricultural Census, there were 1 059 thousand such holdings in 1996, 556 thousand in 2002 and 699 thousand in 2010; the number of microenterprises was estimated in the structural survey in 2013 at 150 thousand. Few such enterprises are the main livelihood for related households: in 1996 – 12.2 thousand, in 2002 – 17.2 thousand, in 2010 – 15.8 thousand, and in 2013 – 5.8 thousand (which seems to be underestimated).

There are two main causes of changes in the socio-economic structure of households related to a user of an agricultural holding. The first one is about overall economic development which creates the demand for labour force from agricultural families and, at the same time, usually offers higher remuneration for labour inputs. It is essentially the basic determinant of changes in this structure. The second cause is related to effects of the market mechanism in agriculture which uses prices to depreciate agriculture by transferring its value. This effect of the market mechanism is universal within the market economy. Engel's law provides that economic development, which is accompanied by prosperity

[48] The Agricultural Social Insurance Fund.

growth, makes food needs gradually satisfied, thus inhibiting growth in the demand for agri-food products. An increasingly smaller part of generated income is used to meet such needs and an increasingly higher part – to meet other needs created by civilisation progress. At the same time, technical progress creates opportunities for increasing production beyond the real demand which must lead to a fall in prices. Agriculture adapts by transferring factors of production, in particular labour force, to other activities. Nevertheless, their market is defective and encounters significant barriers which, together with the delayed adaptation mechanism, negatively affect income. The market mechanism can thus be used for large transfers of generated value – income.

Falling prices together with growing production capacity strongly stimulate production (hence supply) growth, leading to a further decline in prices and, in some cases, even to a drop in income (King's effect). On a competitive market – when there is a demand barrier – the production and income of one farmer can increase to the detriment of another farmer, with the farmer population as a whole condemned to loss because of falling prices.

The presented mechanism makes effects of progress in agriculture being taken over by stronger partners from a closer and further environment of agriculture and, eventually, by consumers. The less organised the farmers and the higher the overproduction, the higher the value added generated in agriculture taken over by others.

Another cause is hardly flexible, i.e. steady agricultural production which is so due to the need for following expected prices, not just *ex-post* prices, and due to constraints to annual changes in the production structure (crop rotation in plant production, herd rotation in animal production) and time between decision-making and effects, i.e. up to several years (e.g. as regards horticulture or dairy farming). The technical infrastructure of an agricultural holding is important as well – buildings, machinery and tools on site – which is cost-intensive and significant in the cost structure. The shift – redirection – of production, in particular on holdings with more advanced specialisation and a larger scale of production, is nothing easy and usually cost-intensive.

The agrarian structure's inertia, which is due to the location of a house within an agricultural holding, is also important. It reduces, in particular as regards small holdings, the supply of and the demand for small plots. Given economic difficulties, and difficulties in organisational and social mergers of agricultural land, an enormous chessboard layout of land *de facto* drives large areas of land as well as numerous small holdings out of the market.

Changes in the level of education of users of agricultural holdings and members of agricultural families are important as well. On the one hand, an ever

growing level of education of the agricultural population increases its chances on the labour market outside agriculture (which promotes changes in the agrarian structure by opting out of running an agricultural holding or reducing its size) and, on the other hand, it stimulates production scale-up by increasing production potential and improving farming effectiveness. Education also influences aspirations and lifestyles on which the succession of holdings is often conditional – making potential successors opt out of running also large-scale holdings specialised mostly in animal production.

Demographic changes are becoming increasingly important. A downward trend in the birth rate and large emigration abroad make the supply of labour force fall when economic growth creates the demand for labour. However, labour surpluses in agricultural families are melting away as a result of the falling birth rate and, consequently, a decrease in the number of agricultural family members, thus reducing the supply of labour of peasant families. There can be only one effect – reaching for agricultural labour resources in the near future which will inevitably lead to agrarian changes.

4. Economic types of family agricultural holdings

The rise of capitalism in agriculture was accompanied by an increasing differentiation of peasant holdings. After all, it was an important political aspect of the agrarian question and a necessary condition for the industrialisation of agriculture – in particular concentration. The diversification of agricultural holdings has objective premises inherent in historically shaped production potentials of individual holdings, their efficient management, their capacity to absorb innovation and a family life cycle.

Apart from the nature of labour inputs which, in the case of family holdings in Poland, are almost exclusively family-related, there are two criteria important to the development of an agricultural holding: a livelihood of a family (household) and the production orientation of an agricultural holding. The former is about a predominant source of disposable income of a family (household), while the latter – about the purpose of most agricultural production: for own use or for sale. Families, for whom their agricultural holding is the main (predominant) livelihood, are statistically referred to as "farmers' households". They are clearly oriented towards agriculture. As regards other – double-occupational or multi-income – households, an agricultural holding is auxiliary. However, the purpose of production is determined by the orientation of an agricultural holding: towards the market or subsistence.

Market holdings can be divided into two groups: farmers' holdings and auxiliary holdings. The former are market-oriented (commodity) holdings whose

agricultural activity is enough to earn a living. The latter, however, are holdings selling most of their production, but it is not large enough to outweigh income from other sources. Subsistence holdings can also be divided into two groups: hobby and problematic holdings. The former earn most of their income from sources other than their own agricultural activity, while pursuing it mostly to meet needs of a household. Of course, income from an agricultural holding is of some importance, but it is often about making sure that agricultural products for own consumption are of good quality. Most of such holdings follow on from a smaller-scale peasant agricultural holding – having the same house and usually low agricultural production. Their number will fall, although it is difficult to predict any increase in this group due to food quality and a passion for agricultural activity in general. As a matter of fact, there is growing interest in rural areas as a place to live and some new settlers also want to "play" with agriculture. Problematic holdings – usually run by people living alone, people with disabilities and "losers" in general – are generally a social problem which can only be solved with the involvement of a social welfare institution.

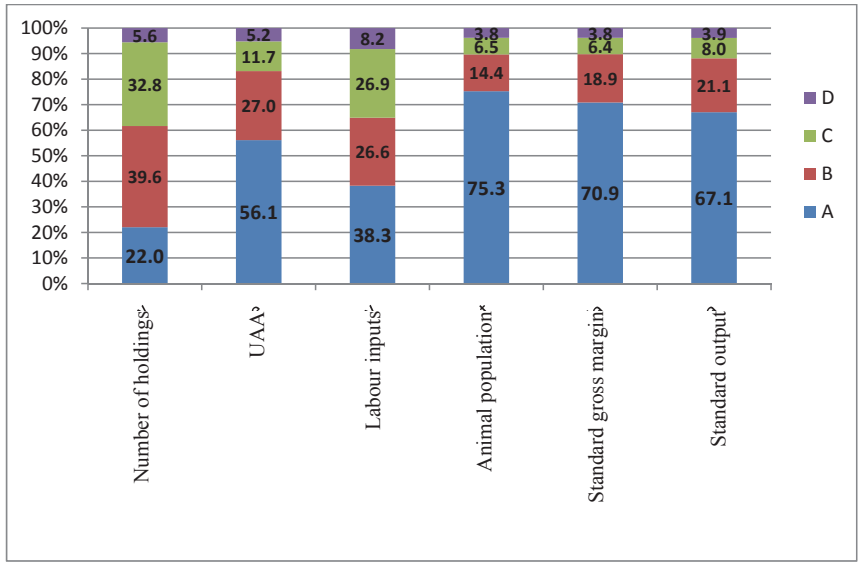
Based on these criteria, four types of agricultural holdings can be distinguished for the purpose of a policy of solving the agrarian problem, i.e.: A – market-oriented holdings being the main livelihood for a family (to be referred to as "farmers' holdings"); B – market-oriented holdings, but not being the main livelihood for a family (to be referred to as "auxiliary holdings"); C – subsistence holdings not being the main livelihood for a family (to be referred to as "hobby holdings"); and D – subsistence holdings being the main livelihood for a family (to be referred to as "problematic holdings").

These types of holdings are not homogeneous in terms of their other features – apart from production orientation (purpose) and a predominant livelihood. To save space, however, these differences are not addressed and individual types of holdings are presented as a whole or as the "statistical average". Individual types of holdings are characterised based on data from the National Agricultural Census 2010, as no other data are available. Since then, the number of individual types of holdings has certainly changed slightly, but their other characteristics have not changed significantly.

These types of holdings hold different places in individual agriculture, taking into account their number, UAA, labour inputs and economic (strength) size measured by both standard gross margin and standard output values (Figure 5). Farmers' holdings, which account for just over 1/5 of individual holdings in total, are of critical importance to agricultural production. Hobby holdings, which account for 1/3 of holdings in total, but less than 1/10 of standard output value, are their opposite. Auxiliary (multi-income) holdings, which account for

nearly 2/5 of individual holdings in total, generate about 1/5 of production value. Problematic holdings are of marginal importance[49].

Figure 5. Structure of family agriculture in terms of the features distinguished by economic type of holdings



A – farmers' holdings, B – auxiliary holdings, C – hobby holdings, D – problematic holdings.
Source: Study based on data from the Statistical Office in Olsztyn.

Holdings of individual types differ in efficiency, if measured by land productivity (standard output value per 1 ha of UAA) and labour productivity (standard gross margin value per full-time employed person – AWU). Farmers' holdings clearly stand out ahead. It is obvious, as they enjoy higher production potential and are usually guided by a better or worse calculation – an economic calculation in production decision-making. Auxiliary holdings can be expected to take the next place in terms of economic efficiency, while hobby holdings should be at the bottom of the list as confirmed by the following (Table 17).

[49] In 2010, the number of individual holdings was 1 886.9 thousand, UAA – 13 386 thousand ha, the number of the full-time employed – 2 053 thousand, the animal population – 6 568 thousand LUs, the standard gross margin – EUR 12 949 million, and standard output value – EUR 17 331 million.

Table 17. Values and ratios of basic features of holdings by economic type in 2010 (on average per holding)

Specification	In total	A	B	C	D
UAA (ha)	7.09	18.05	4.84	2.52	6.63
Labour inputs (AWU)	1.09	1.89	0.73	0.89	1.60
Animal population (LU)	3.48	11.89	1.26	0.69	2.39
Economic size (ESU)	3.43	11.03	1.64	0.67	2.35
Labour inputs/ha (AWU)	0.15	0.10	0.15	0.35	0.24
Animal population/ha (LU)	0.49	0.66	0.26	0.27	0.36
Standard gross margin/ha (ESU)	0.48	0.61	0.34	0.27	0.35
Standard gross margin/AWU (ESU)	3.15	5.84	2.24	0.75	1.47
Standard output (EUR '000)	9.18	27.94	4.89	2.23	6.38
Standard output/ha (EUR '000)	1.29	1.55	1.01	0.88	0.96

Source: Study based on the same data as in Figure 5.

Market holdings of farmers stand out from other holdings in terms of their production and economic performance. Of course, it was expected. Based on the distribution of holdings by economic size, it can be said that market holdings of farmers (A) clearly stand out from other economic types.

A-type (farmer) holdings enjoy higher economic strength (viability) than others, that is obvious. However, the share of economically viable holdings (≥8 ESUs) of this type as well is only 38%, i.e. slightly more than that of economically unviable holdings (37%). Surprisingly, the share of economically viable holdings among D-type holdings is significant. It is suggested by relatively high natural (subsistence) consumption. Nearly all C-type (hobby) holdings are economically unviable. The share of unviable B-type (auxiliary) holdings is high as well. Although C-type holdings play a minor role as market players, B-type holdings – however – are important in this respect.

Table 18. Selected features of users of agricultural holdings by economic type (2010)

Specification	In total	A	B	C	D
	In % of holdings in total by column				
General higher education	10.2	5.5	15.2	8.6	3.2
Agricultural education	41.0	63.7	35.2	31.5	48.0
- higher	1.9	2.5	2.5	0.9	0.7
- post-secondary and vocational secondary	8.5	15.2	8.1	4.8	7.3
- basic vocational	10.9	23.0	7.3	6.2	15.8
- agricultural training	19.7	23.0	17.3	19.5	24.2
Users – men	64.6	82.2	61.1	55.6	72.2
- <44 years old	36.9	42.8	38.1	31.1	38.4
- 45-64 years old	50.7	54.9	48.7	49.2	57.6
- ≥65 years old	10.7	1.8	11.2	17.5	3.2

Source: Study based on the same data as in Figure 5.

Furthermore, holdings of these types differ significantly in terms of the human factor, taking into account the sex, age and education of their user (Table 18).

The data above reveal that:

- firstly, general education encourages non-agricultural employment and those who undertake non-agricultural studies can be deemed *a priori* to see their future outside an agricultural holding; hence the lower share of users with general higher education among A-type holdings;
- secondly, higher agricultural education is most commonly recorded among A-type holdings which should not be surprising, as those studying agriculture more frequently commit their future to an agricultural holding and they perhaps run agricultural activity more rationally, thus facilitating the fulfilment of the criterion of being classified to this type (they simply earn higher income from their agricultural holding);
- thirdly, A-type holdings are more often run by men which is not irrelevant to agriculture;
- fourthly, A-type holdings are more often run by younger users and relatively less often by elderly users;
- fifthly, elderly users of holdings more often earn their main income from non-agricultural activity which is primarily due to the fact that this type includes retirement pensioners having no successors at all or no one interested in taking over their holdings[50].

In conclusion, the human factor of A-type holdings is of higher quality which is no surprise given a large share of holdings of retirement and disability pensioners among B- and C-type holdings. A relatively small group of D-type holdings is an exception, as they seem to be problematic mostly due to the human factor – physical and/or mental malfunction, illness.

Agricultural self-employment as the main livelihood has a bearing on an agricultural family's attitude towards an agricultural holding and its agricultural activity. If a household (family) earns its predominant income from other sources, in particular from employed labour, its motivations for making effective use of production resources of its agricultural holding are weakened. The amount of non-agricultural income and attitudes of users of agricultural holdings are also important in this respect. Some strive to exploit this potential (type B), while others place a primary emphasis on providing themselves with own – in their opinion, high-quality – food (type C) rather than earning extra income.

The production orientation of holdings is largely reflected in the crop structure which is dominated by cereals (A – 72%, B – 78%, C – 81%, and D – 83%), while the share of industrial plants is highest among A-type holdings –

[50] It is fully confirmed by results of studies on the succession of holdings [Dudek 2016].

12%, and B – 8%, and significantly lower among B- and C-type holdings (by 2% each). Hobby holdings (type C) are characterised by a relatively high share of potatoes – 9% (D – 5%, B – 4%, and A – 3%).

Holdings of individual economic types differ in the intensity of animal production which is reflected in both the share of livestock holdings, with dairy cows and poultry. A "feeder-cow" is becoming a thing of the past, but it still is found sometimes on non-agricultural holdings. There are still 192.7 thousand dairy cow holdings in these types (type B – 81.9 thousand, and type C – 110.8 thousand) which accounts for 44% of dairy cow holdings (Table 19).

Table 19. Animals on holdings by economic type

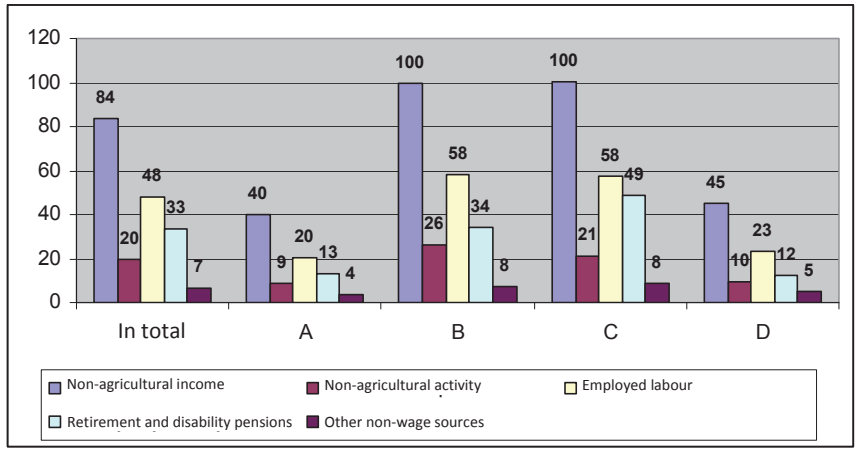
Specification	In total	A	B	C	D
Number ('000) of	1 886.9	416.0	747.4	618.4	105.1
- livestock holdings	1 059.3	309.1	266.9	399.5	83.7
-- dairy cow holdings	434.5	195.6	81.9	110.8	46.2
-- poultry holdings	788.7	197.1	199.0	331.5	61.2
Livestock ('000 LUs)	6 567.8	4 945.0	945.2	426.6	251.0
- cattle ('000 LUs)	4 125.5	3 241.1	478.3	248.9	157.3
Population of livestock (LUs/100 ha)	49	66	23	27	36
- on animal holdings (LUs/100 ha)	72	87	54	36	42
Population of animals (LUs/holding)	3.5	11.9	1.1	0.7	2.4
- per animal holding (LUs)	6.2	16.0	3.5	1.1	3.0
% of animal holdings	56.1	74.3	35.7	64.6	79.6
% of cow holdings	28.3	47.0	11.0	17.9	43.9
% of poultry holdings	41.8	47.4	26.6	53.6	58.2
Livestock (LUs) (distribution)	100.0	75.3	14.4	6.5	3.8

Source: Study based on the same data as in Figure 5.

Most family holdings in a developed industrial economy have many sources of income. It is so for 84% of family holdings in total (National Agricultural Census 2010), 100% of auxiliary and hobby holdings (*ex definitione*), 40% of farmers' holdings (over half of them consider agriculture as the only livelihood) and 45% of problematic holdings. Holdings usually earn their income from employed labour and, to a lesser extent, from retirement and disability pensions; relatively less common sources of income include non-agricultural business activity and other non-wage sources (cf. Figure 6).

Earning income from a given source is reflected only to some extent in a predominant livelihood for households as a whole. Their structure thus differs significantly in terms of their predominant livelihood.

Figure 6. Prevalence of non-agricultural income on holdings by economic type in 2010



Source: Study based on the same data as in Figure 5.

Table 20. Selected environmental sustainability indices for holdings by economic type (2010)

Specification	In total	A	B	C	D
Share of holdings[a]					
Using mineral fertilisers[b]	66.4	88.9	58.7	58.3	79.0
Using organic animal fertilisers	46.6	70.8	29.7	46.7	71.7
Using plant protection chemicals	83.4	91.4	91.1	79.1	84.8
Fulfilling the cereal criterion	28.9	31.4	24.3	33.4	20.1
Fulfilling the green cover criterion	59.1	62.7	60.2	54.0	63.4
Fulfilling the plant group criterion	20.1	36.5	13.7	12.7	23.8
With a positive balance of organic matter	44.5	48.7	52.5	32.9	43.5
Absolute values					
Mineral fertilisation (dt of NPK/ha)[c]	97.1	119.2	75.8	48.1	69.8
Organic fertilisation (dt of NPK/ha)[d]	76.2	100.1	41.4	47.1	56.3
Calcium fertilisation (dt of CaO/ha)[e]	34.1	47.7	21.1	6.5	11.9
Balance of organic matter (t/ha)	0.03	0.30	0.04	-0.16	-0.01

[a] in the case of mineral fertilisers and plant protection products, all holdings in a given class were a reference basis, so were field crop holdings in the case of the criteria and the balance of organic matter; [b] including calcium fertilisers; [c] in a pure elemental component; [d] fertilisers of animal origin in an elemental component; [e] in a pure component, on holdings using liming.
Source: Study based on the same data as in Figure 5.

Agricultural holdings face increasingly demanding expectations in terms of sustainability, in particular environmental sustainability. It is hard to measure such sustainability, as environmental sustainability indices have not been fully established yet and as there are insufficient relevant data. The data in Table 20 are thus treated as rough approximates. Consideration will be given to the use of

mineral fertilisation, including calcium fertilisers, and organic fertilisation, the use of plant protection chemicals, the balance of soil organic matter (important to preserving soil fertility) and 3 commonly used environmental sustainability criteria (share of cereal in the crop structure, green cover and types of cultivated plant groups)[51]. However, the livestock density criterion is not taken into account, as it is generally fulfilled – except for farms specialised in livestock production.

The data above indicate the advantage of A-type holdings over others in terms of adopted sustainability indices.

[51] The share of cereal in the crop structure should not exceed 66%; green cover on arable land in winter should be at least 33% of the area; at least three plant groups should be cultivated on arable land.

IV

FAMILY HOLDINGS IN THE CONCEPT OF SUSTAINABLE DEVELOPMENT

1. Sustainable development of agriculture

Poland, similarly to the other EU countries, took a strategic course for the sustainable development of agriculture and rural areas – as the one corresponding to values and requirements of overall socio-economic development. As the agricultural system is multidimensional, there are plenty of options for determining a long-term direction of agricultural development. It is so for technology in respect of which the choice is between industrial technology and agro-ecological, including organic, technology. As regards organisation, the choice is between collective (social or corporate) holdings and private (family and capitalist) holdings owned by natural persons. With respect to production orientation, the choice is between subsistence and the market – a global or local one. In the case of relations with other actors in the food chain, the choice is conditional on the market and vertical integration (agribusiness). One cannot overlook also the spatial allocation of agri-food production: the degree of concentration and regional or local specialisation.

Having realised various environmental and social effects of the industrial model of agriculture, the issue of further development was given attention to. The awareness of these effects itself would probably be insufficient to politically address this issue, if not tough economic realities: rapidly increasing losses due to environmental degradation, deteriorating ratios of prices of energy resources to prices of agricultural produce, a threat to food safety and an increase in economic well-being which change, *inter alia*, the way environmental values or the taste and nutritional quality of food products are perceived.

The term "sustainable development" has no single meaning and definition. The discourse is determined by two schools of thought. One is based on relations between types of governance (spheres), i.e. a certain balance, while another one – on the fulfilment of certain critical thresholds of sustainability [Zegar (ed.) 2017]. Both schools of thought have at least three types of governance (spheres): environmental, economic and social governance. Environmental governance is all about: 1) biodiversity protection – striving to stop biodiversity decline; 2) soil protection – striving to stop fertility degradation and loss, and to renew and even enhance fertility; 3) climate protection – stopping climate warming by reducing greenhouse gas emissions and increasing carbon uptake in soil; 4) fresh water protection – preventing the degradation and rational use of

water; 5) protection of mineral resources, in particular energy minerals used for energy generation, chemical fertilisers and plant protection chemicals, phosphates and other minerals; 6) protection of landscape values. With respect to economic governance, the main concerns are as follows: 1) creation of the value added allowing for parity (satisfactory) remuneration for labour inputs; 2) parity agricultural income and the income of a family running an agricultural holding; 3) profitability of committed capital comparable to other sectors; 4) competitiveness. Social governance is all about: 1) food safety; 2) social acceptance; 3) rural viability; 4) social inclusion; 5) poverty eradication. Given the disharmony of the types of governance above, the problem is not only to find ways to achieve them, but also to balance them – to find a common denominator or common space.

The model of sustainable agriculture is based on a new methodological approach. First and foremost, it is abandoning reductionism in favour of holism in terms of agriculture. It is reflected, *inter alia*, in questioning a far-reaching break-away of agricultural production processes from the natural environment as well as the use of mainly depleting and non-renewable resources. Instead, an emphasis is placed on the use of laws of nature and knowledge. Agriculture is not only about the manufacturing of agricultural products (not only about technology) and not only about "machinery" for (only marketable) value added creation, but also about many other environmental, social and cultural goods and services. The process as such is not so much about converting means of production into final agricultural products, but rather about complex and somewhat incomprehensible interweaving biological, biochemical, economic, social and other processes which lead to creating different goods and services for man and nature.

The prevailing view in Poland is that agricultural structures follow the model of Western European agriculture, and that it is legitimate and necessary to achieve the state of structures of such agriculture as quickly as possible. The main argument is competitiveness on the common European market and on the global market. It is an important argument, but agricultural holdings on the domestic and European market have different efficiency and economic strength, and this is what the future will probably look like. The market, including the common European market, requires that agricultural holdings be diverse, because their diversity is essential for trade. The standard model – the European model of agriculture – a rather theoretical construct – is evolving and should follow, as some think, the U.S. path to deal with competition on the ever stronger global market. It is, however, an incorrect assumption. The differences between conditions and the entire legacy – the tradition of European agriculture (also in-

homogeneous agriculture) and the U.S. agriculture, are huge and cannot be overcome. One should also take into account here that the industrialisation of agriculture and the farmer's path, which is appropriate for all regions, are increasingly challenged. Industrial agriculture is inherent in food chains which make up the global corporate food system. The system is challenged as well – after all, its defects and threats are recognised with respect to both food safety and social welfare. The importance of family agriculture is increasingly recognised at the same time, in particular in terms of rural viability and a new look at values of folk culture and tradition, and its role in consolidating the State. However, the problem of income – the disparity of incomes of the agricultural and non-agricultural population – remains present, so is thus the agrarian problem as such.

Industrial agriculture, which significantly increased productivity and lowered prices, is criticised for its impact on the environment, social well-being and local viability [Ikerd 1995] as well as its pricing system which depreciates agriculture – also as a result of consumer pressure on cheap food. It can be concluded that such progress made in increasing agricultural production through the use of depleting resources was found to be a dead end and *eo ipso* necessitated coming back to a crossroads to take a different path – shifting from industrial intensification to agro-ecological intensification that uses natural laws, microbiology progress and truly unlimited resources: solar energy and knowledge which is not only a renewable resource, but also the one that is reproduced positively. In fact, it is about returning to the Platonic idea of the harmony of nature which was challenged in the second half of the 18th century when the concept of natural selection and struggle for existence was introduced [Darwin 2009], and when efforts to make nature subordinate to man, who interpreted certain provisions of the Book of Genesis too literally, were intensified.

When challenging industrial agriculture, different visions of post--industrial agriculture, which follow four relatively clear directions, are brought into light. The first one, which is unlikely in the foreseeable future, involves a shift from field production and animal breeding to the manufacturing of agri-food products in factories – laboratories. Agricultural land would thus be released in favour of forests, ecological land, recreational areas and other civilisation development needs. The second one is about continuing intensive agriculture thanks to external inputs, i.e. industrial agriculture in fact, although subject to rigours – ecological requirements. This model of agriculture meets expectations in terms of competitiveness and cheap food products, and basic environmental standards. Changes in mechanisms of the Common Agricultural Policy, in particular greening, cross-compliance, animal welfare requirements and agri-

-environmental programmes, serve this purpose. This trend encompasses integrated and precision agriculture. Together with advances in genetic engineering and biotechnology (GMOs), nanotechnology and other innovations, such agriculture provides opportunities for further agricultural production growth, ties in with the globalisation of the agri-food sector, but it does not eliminate negative social effects and does not solve all environmental problems. The third direction is based on the model of organic agriculture which involves returning to natural relations and to taking an organic approach to an agricultural holding – returning, but at a higher level. The fourth direction refers to socially sustainable agriculture whose foundations started emerging only a dozen or so years ago [Woś and Zegar 2002]. The model prioritises family holdings and the social aspect, and takes them as its basis. The foreseeable future will perhaps bring different systems, including the sustainable system being increasingly important, which is due also to the diversification of natural and socio-economic conditions.

The nature of social processes makes it impossible to determine a single model of agriculture once and for all. The structure of agriculture is too complex to consider one or another model as universal, no matter time and circumstances. As regards the whole complexity of its structures, agriculture is evolving within a wide band of trajectories towards a direction which is not entirely two-colour. It is a great dilemma faced by agriculture at present. Nevertheless, setting one model to be followed by all agricultural operators, just as setting only one criterion (e.g. labour productivity, economic benefit), is at least doubtful, if not wrong. What is more, the inherent diversity of agriculture: natural and socio-economic conditions, technology, manufactured products, environmental impact, makes it difficult to set unified thresholds to distinguish individual models which may share certain features, differ in and stand out with other features.

Industrial agriculture has an advantage when considering only economic benefits and disregarding hidden effects (externalities). Such agriculture – capital-intensive, high-tech, integrated into food chains – does not meet sustainability requirements because of its human and environmental impact. In fact, agriculture should produce healthy food as needed, respecting the natural and social environment. It should, therefore, be based on a new understanding of sustainability which takes into account the common good, not the profit of narrow groups, which is not oriented towards large corporations, but towards local communities, while supporting rural viability. Sustainable agriculture has to be included in the complex structure from the local level to the planetary level, whereby *sustainable agriculture would help to globalize the civil commons, not the rights of huge transnational corporations* [Sumner 2005, p. 309].

In the foreseeable future, one should be aware of the duality of agricultural development, as envisaged by Dominique de Cornulier, i.e. the coexistence of holdings engaged in mass production (dominated by medium-sized holdings) and ecological (organic) holdings engaged in the production of luxury products [Cornulier de 1978].

2. Food safety

Food safety – a kind of a public good – has always been at the heart of agriculture. In fact, feeding a family and providing products to feed a certain community is a duty of agriculture. It not always fulfilled this duty for various reasons, often outside its control, resulting in hunger and malnutrition plagues. In global terms, the situation was significantly changed by the industrial transformation of agriculture related to the development of capitalism. The industrial model of agriculture, which is typical of most developed countries and gradually transferred to developing countries, ensured a rich supply of food – cheap food, reduced hunger and malnutrition, but failed to ensure food safety to everyone – failed to eliminate hunger and malnutrition. It turned out that producing food was not enough, as the real demand was needed. It was also found that meeting needs in a quantitative (caloric) sense is insufficient – diet micro- and macronutrients are important. Attention is increasingly paid to food quality, food manufacturing technologies in agriculture and food processing (environmental friendliness), and the social organisation – promoting poverty reduction. Food safety, therefore, includes components, such as: supply of food, quality of food products, manufacturing (environment- and community-friendly technologies, inclusion, poverty reduction), consumption (cultural suitability, local systems), wastage reduction.

The contemporary food system, which is dominated by large corporations, based on industrial agriculture, "enriching" food in food processing, making it available in large retail chains – transporting food from one end of the world to the other and back again – faces growing criticism. In fact, the system sacrifices food quality, i.e. consumers' health and the environment, for the sake of greed, economically marginalising – after all – small producers and often forcing them to migrate. As a matter of fact, the system follows the motive of profit (economic benefit), not the motive of consumers' health. While treating food only as a commodity, the system triggers the substitution of products for economic benefits (e.g. cane sugar, palm oil are replaced with high-fructose corn syrup, margarine). Its effects are overproduction and wastage, hunger and malnutrition, and dubious food quality. Its special effects are reflected in climate change, fresh

water and non-renewable mineral pressures, biodiversity decline, soil degradation (erosion, organic matter loss), food waste, food quality.

It also turns out that not only the conventional agricultural system (industrial intensification) can ensure a sufficient supply of food – food safety, but also alternative agricultural systems can do it [Badgley et al. 2007; The Royal Society 2009; IAASTD 2009; Foresihght 2011; IPES-Food 2016]. Small holdings, which can achieve higher land productivity (several times higher and more intensive crops, greater involvement of family labour force, own means of production) and provide employment in less developed countries rather than enlarge urban slums, play an important role in this respect.

The growing criticism of the industrial system made it necessary to establish a new food system – based on solid foundations, providing food safety, reducing the use of fossil fuels, greenhouse gas emissions, eliminating the excessive transport of food products. Such a system is needed at all levels: local, national and global ones. The challenge is enormous, since the demand for food is increasing as opposed to production resources (depletion of energy minerals, soil erosion, grabbing of land to use it for other purposes, increasing water scarcity, biofuel need). The new system has to take into account relations between the environment, health and social justice [Lang et al. 2009].

The new food system has two decisive elements. The first one is about the way of increasing food production. In practice, the main path to be followed is sustainable intensification, not only with respect to land productivity, but also the productivity of all means of production, and taking into account its impact on ecosystem services. The second element is about relations between the global system and local systems. Experience over recent years has shown that food safety cannot be based solely on the global market. A new light is shed on relations between the global food system and local food systems. The former, which is based on large corporations and retail chains, developed in the second half of the 20th century when large corporations dominated the market, spread new processing methods and, above all, broke ties between producers and consumers. However, local systems, which are based on family holdings engaged in diverse production and traditional processing (salting, smoking, sun drying, fermentation), were dominant until the mid-1950s. Fresh food and direct links between producers and consumers are its undeniable advantage, while considerable price fluctuations and a less varied offer, which makes consumers' choice limited, are its disadvantage. For some time, local systems have been reviving and developing primarily in Europe, the U.S. and other highly developed countries, i.e. countries with the most developed industrial system [Goodman et al. 2012]. Such systems are particularly promoted by proponents of the concept of food

sovereignty which was brought back to life as a result of reflection on peasant agriculture affected by the policies of the 1980s and the 1990s and as a response to practices of the corporate food system based on industrial agriculture, trade liberalisation and production maximisation, but not paying enough attention to how and by whom food is produced, distributed and consumed. Food sovereignty emerged in the dialogue of various global peasant organisations in response to challenges of the dominant corporate system. The food sovereignty focuses on rights of food producers and consumers – so as to make them regain control of the food system and free it from interests of corporations and global financial institutions.

Given forces moving towards both systems, and their advantages and disadvantages, one can expect them to function side by side in the foreseeable future, i.e. such a food system can be *de facto* considered as dual. The significance of both components will vary by level of economic development, region and food policy of each country.

Table 21. Production of basic agricultural produce and animal products in Poland in 1950-2015 (agriculture as a whole)

Specification	1950	1960	1970	1980	1990	2000	2010	2015
Cereal ('000 000 tonnes)	12.0	14.8	16.3	18.3	28.0	22.3	27.2	28.0
- 4 types of cereal[a] ('000 000 tonnes)	11.6	14.3	15.4	16.4	21.4	17.4	17.2	17.2
Potatoes ('000 000 tonnes)	36.1	37.9	50.3	26.4	36.3	24.2	8.2[c]	6.3[c]
Sugar beets ('000 000 tonnes)	6.3	10.3	12.7	10.1	16.7	13.1	10.0	9.4
Oilseeds ('000 tonnes)	110	181	600	583	1233	971	2273	2763
Meat[b] ('000 tonnes)	1 139	1 655	2 048	3 148	3 325	3 119	3 909	4 601
- poultry meat ('000 tonnes)	33	61	128	419	311	579	1 386	1 988
Milk ('000 000 tonnes)	7.8	12.1	14.5	16.0	15.4	11.5	11.9	12.9
Hen eggs ('000 000 000 units)	3.3	5.6	6.9	8.9	7.6	7.6	11.1	10.5

[a] wheat, rye, barley, oats; [b] meat, fat and offal in cold carcass weight; [c] harvest from home gardens excluded

Source: Statistical yearbooks and statistical yearbooks of agriculture, different years.

Agriculture in post-war Poland significantly increased production which allowed for ensuring food safety **in quantitative terms**. At the same time, it was adapting to the demand by increasing the production of cereal, in particular cereal and grain maize blends, oilseeds, meat (primarily poultry) and hen eggs,

while decreasing, *inter alia*, the production of potatoes (Table 21). In the last case, the main cause was a change in the pig feeding system and a less important one – a change in diet.

An increase in the production of basic food products was preceded by an increase in the population of Poland, i.e. from 25 million in 1950 to 38.5 million in 2015 (up by 54%) – so that their production increased in *per capita* terms as well (Table 22). Despite market shortages (in some periods, even the allocation system – ration coupons for some products), agriculture thus generally increased "quantitative" food safety in the country.

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Table 22. *Per capita* production of selected agricultural products in 1950-2015

Specification	1950	1960	1970	1980	1990	2000	2010	2015
Cereal, kg	485	501	501	461	634	477	565	585
Meat[a], kg	46	56	63	85	82	78	101	120
Cow milk, l	314	409	446	450	404	302	310	334
Hen eggs, units	137	189	214	250	200	199	269	272

[a] meat, fat and offal from slaughter
Source: [Statistical yearbooks, different years].

Table 23. *Per capita* consumption in 1950-2014

Specification	1950	1960	1970	1980	1990	2000	2010	2014
Grain of 4 types of cereal, kg	166	145	131	127	115	120	108	106
Meat and offal[a], kg	36	42	53	74	69	66	74	74
Cow milk[b], l	206	227	262	262	242	193	189	205
Hen eggs, units	116	143	186	223	190	188	202	155

[a] meat and offal for processing included; [b] milk for processing included
Source: Statistical Yearbook 2015, CSO, Warsaw 2016, pp. 68-69, Table I.

Domestic production has been and still is the dominant source of the supply of products for consumption which also increased, although in different directions – the consumption of meat trended upwards, while the consumption of cereal grain – downwards. The consumption of milk and hen eggs was subject to ambiguous (multidirectional) changes (Table 23).

The energy value of food intake (kcal *per capita* a day) is 3.5 thousand, including 2/3 provided by plant products. Poland does not significantly differ from the EU-15 in this regard and in the case of protein intake.

With a few exceptions, Poland's self-sufficiency indices[52] for basic products of plant and animal origin are improving which is a sign of surpluses [Kwasek 2016]. In general, it can be stated that food consumption reaches its ceiling – its further course will depend on demographic changes (population decline, ageing) and changes in the structure of food consumption (products of higher quality, in particular meat products, more vegetables and fruit, less "junk" food), higher consumption in food service outlets and of processed food[53]). Education on healthy eating has an important role to play in food consumption – a balanced diet with a higher consumption of vegetables and fruit and a lower consumption of meat, especially low-quality meat from industrial breeding farms. At the same time, it would be advisable to impose restrictions on advertisements of food products at odds with a healthy diet model.

The agri-food system in Poland is getting closer to the industrial system. This is the case with agriculture and industrial processing, retail chains and diet. However, the awareness of a healthy diet is rising, although among a relatively narrow group so far. The main challenge of a food policy is thus to bring together all healthy diet components into one system oriented towards human health which also translates into human economic activity.

3. Natural environment

Agriculture is the main user of land (physical space of the country), a significant user of fresh water, energy minerals and, at the same time, a contributor to pollution and water eutrophication, a significant emitter of greenhouse gases, in particular methane and ammonia, thus contributing to climate change, an important backbone of biodiversity and an element of ecosystems.

The share of agriculture in land use is decreasing, as agriculture is transferring agricultural land to other sectors of the economy, in particular municipal construction, infrastructure, industry, forestry (share of agricultural land in the country's total area has decreased from about 2/3 to less than 1/2 over 60 years). However, the importance of agriculture in water use, greenhouse gas emissions and biodiversity decline is increasing[54]. It is related to the manufacturing of ag-

[52] Self-sufficiency index = domestic production/domestic use (quantities) x 100.
[53] It is easy to notice that it may be at odds with eliminating "junk" food.
[54] In Poland, agriculture accounts for about 9% of national greenhouse gas emissions. In 1990-2010, methane emissions from agricultural sources and nitrous oxide emissions in-

ricultural products – agricultural technologies and practices specific to industrial agriculture. A fundamental challenge for agriculture thus arises: how to increase agricultural production and avoid increased environmental pressure. Under conditions of limited opportunities for increasing agricultural land, the only way to increase agricultural biomass is to increase land productivity.

The land use is changing in favour of forests and wooded areas which is, obviously, of great significance to the natural environment and biodiversity protection. However, the land is increasingly intended for other – non-agricultural and non-forest – purposes (14% in 1950 and 23% in 2015). The share of UAA decreased from 66% in 1950 to 46% in 2015, while that of arable land – respectively from 51% to 35%, and of forests and wooded areas increased respectively from 22% to 30%. Achieving lower agricultural land use and higher agricultural production at the same time was possible thanks to increased land and livestock productivity which was achieved owing to biological progress, mineral fertilisation and plant protection chemicals. Nevertheless, mineral fertilisers, in particular plant protection chemicals, have an adverse impact on both nature and food products.

Polish agriculture has not exerted increased pressure on water resources so far, as its share in water intake was around 10% of total intake for national economy purposes, i.e. just over 1 thousand hm^3. The area of irrigated UAA decreased significantly during the political transformation. Nevertheless, recent years indicate that the downward trend in irrigated land has reversed and this reversal appears to be lasting, albeit being far away from the world average (share of agriculture in the world's water use is around 70%).

Agriculture is an insignificant emitter of sulphur dioxide (37 thousand tonnes – 4.3% of total emissions), nitrogen oxides (20 thousand tonnes – 2.4%), carbon monoxide (188 thousand tonnes – 6.7%), non-metal volatile organic compounds (18 thousand tonnes – 2.9%) and particulate matter (50 thousand tonnes – 10.4%), a significant emitter of ammonia (257 thousand tonnes – 97.7%) and nitrous oxide (81 thousand tonnes – 83.5%), and a large emitter of methane (546 thousand tonnes – 27.9%). The gross nitrogen balance is positive[55]. Agriculture is a large emitter of greenhouse gases, such as carbon dioxide

creased by 24% and 35% respectively. However, ammonia emissions decreased by about 15% [Toczyński et al. 2013].

[55] The gross nitrogen balance in kg of N/ha of UAA (2011-2013 average) is as follows: nitrogen input – 132.0 kg (mineral fertilisation – 78.4 kg; natural fertilisation – 36.6 kg; seed and seed potatoes – 2.3 kg; symbiotic nitrogen – 3.8 kg; nitrogen in atmospheric precipitation – 10.9 kg). Crop-derived nitrogen – 79.9 kg. The balance is 52.1 kg. The nitrogen balance was determined based on data from: Yearbook of Environmental Protection, CSO, 2014, p. 130,

– CO_2 (in 2014, 16.8 million tonnes, including 2.3 million tonnes from biomass), nitrous oxide – N_2O (55 thousand tonnes), methane – CH_4 (576 thousand tonnes), nitrogen oxides – NO_x (156 thousand tonnes). Greenhouse gas emissions from agriculture in CO_2 equivalent are nearly 50 million tonnes, i.e. 8% of total greenhouse gas emissions in Poland.

While the risk of soil erosion and salinity is insignificant, the loss of soil organic matter and soil acidification are of concern, as being a serious threat to land productivity. Measurements from 2010-2013 reveal that 15% of soil was very acidic (pH <4.5), 28% – acidic (pH 4.6-5.5), 33% – slightly acidic (pH 5.6-6.5), 16% – neutral (pH 6.6-7.2), and 8% of soil – alkaline (pH >7.2). This determines the need for soil liming in Poland which was found necessary in 2010--2013 with respect to 21% of soil, needed – 16%, recommended – 18%, limited – 16%, and unnecessary – 29% of soil.

Biodiversity in Poland is relatively rich. About 70 thousand species of living organisms (including over 40 thousand species of animals) live on 32.5% of the country's area under legal protection. Natura 2000 special bird protection areas cover about 16%, while special habitat protection areas – over 11% of the country's total area. About 1/4 of the country's area is agricultural land used so as to promote biodiversity. However, the progressive industrialisation of agriculture negatively affects biodiversity – e.g. the population of birds typical of agricultural landscape habitats (so-called Farmland Bird Index) declined slightly.

4. Income

Income is important, as it is decisive in determining the financial situation, economic opportunities, social security and meeting intangible needs of agricultural families. Cumulative income creates wealth or prosperity, widens choices. Regardless of ethical judgment, earning income is a great incentive for people to act. Although Aristotle rightly pointed already in ancient times that *wealth is evidently not the good we are seeking; it is merely useful and for the sake of something else* [Aristotle 1996], it is difficult to deny the thesis that the motive of income is not, paradoxically, losing but gaining importance as prosperity increases. In fact, it turns out that wealth usually becomes an end in itself at present.

Table 19(37). Also other data on the environmental pressure of agriculture were derived from this source.

The problem of income in Polish agriculture is primarily about:

1) low income of the agricultural population – both agricultural income, i.e. from agricultural production, and the personal (disposable) income of households – which directly affects remuneration for labour inputs in agricultural activity, the possibility of accumulation and investment in the development of agricultural holdings and possibilities of expenditure on consumption, including the consumption of goods and the use of social services, including education. The lower income of the agricultural population is nothing new or extraordinary. However, a standard 100 or 30 years ago cannot be a standard at present;
2) significantly greater income diversification and greater poverty among the agricultural population compared to other social groups. A strong link between the income of farmers and the size of their holdings together with other factors make the personal income of agricultural households highly diversified. Due to natural causes (incomplete families, holdings of elderly people with no successors, holdings of disabled people) and a small size, a certain group of agricultural holdings is condemned to poverty in the absence of non-agricultural employment. A large group of the peasant population without the real possibility of breaking out of the "vicious circle of poverty" is thus marginalised. It carries the risk of perpetuating poverty and wasting opportunities for exploiting the potential of this group for increasing social wealth. It is also often a source of social pathologies. This diversity of income and opportunities has a spatial and economic dimension. The labour market offer farmers other opportunities within the reach of metropolitan or larger urban areas, while other markets – in remote, predominantly agricultural peripheries;
3) inability to solve the problem of agricultural income through the spontaneous functioning of market mechanisms, as these mechanisms themselves contribute to the depreciation of agriculture by transferring some economic surplus generated in agriculture to consumers and non-agricultural sectors of the economy[56].

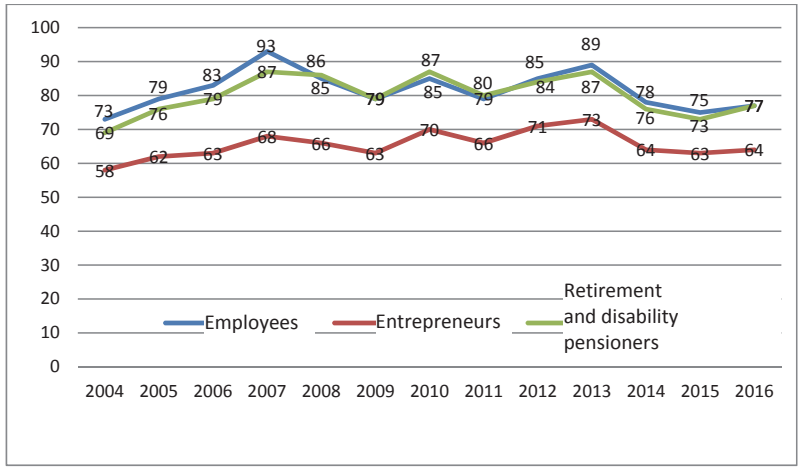
Income ratios for the agricultural population were unfavourable during the entire period of the industrial transformation of agriculture. The situation be-

[56] It is nothing new, as – since when product surplus over the minimum necessary for the existence of peasant families occurred – there has emerged a social group, which took over the surplus for playing a particular social role (e.g. ensuring security). Since the rise of class society, the surplus has been taken over by a superior, ruling social class (group) [Wolf 1966, pp. 3-4]. Over time, there has emerged a social group which supported itself on its own (inherited) property or enjoying its social status privileges, not engaging in any socially useful work – rightly referred to by T. Veblen as the "idle class" [Zegar 2000, p. 13].

came dramatic at the beginning of the political transformation when the income parity ratio for farmers fell below 50%[57] – the level recorded in the 1930s. In the 1990s, the income barrier was about lack of opportunities for increasing peasant income through production growth, while the employment barrier blocked opportunities for distributing such income among a smaller peasant population. The situation changed in favour of Poland following its accession to the European Union, in particular due to transfers under mechanisms of the Common Agricultural Policy. However, this coin has another side, i.e. a significant dependence of holdings' economics on the transfers – these are, paradoxically, larger holdings.

Taking into account (average monthly *per capita* disposable) income in households of employees, entrepreneurs, and retirement and disability pensioners, income ratios were determined, indicating the disparity of households of farmers compared to other socio-economic groups of households (Figure 7) for 2004-2016.

Figure 7. Ratio of *per capita* disposable income in households of farmers to such income in households of employees, entrepreneurs, and retirement and disability pensioners in 2004-2016 (%)



Source: Calculated based on CSO data (household budgets).

The disparity of income is also reflected in the risk of poverty which is about 2-fold higher in households of farmers than in households in total.

[57] According to E. Gorzelak, the average income of a farmer for consumption and non-productive investment purposes in % of the net wage of employed workers in the national economy was: 70.5% in 1986-1988, 60.6% in 1989-1991, 48.3% in 1992-1994 [Gorzelak 1998, p. 89, Table 29].

As income increases above the subsistence minimum, a subjective assessment of the economic situation, which is influenced by culture and the economic situation of others, gains importance. It is well known that material aspirations of the rural population, in particular the agricultural population, differ *in minus* from the aspirations of the urban population, especially the so-called elites and business. The subjective assessment of the material situation is thus slightly better than suggested by the absolute level of income (Table 24).

Table 24. Subjective assessment of the material situation in households of farmers and employees[a] in selected years (%)

Year	Households of farmers			Households of employees		
	Very good and good	Average	Bad and very bad	Very good and good	Average	Bad and very bad
1989	19.9	68.6	11.5	17.9	66.5	15.6
1995	8.9	65.8	25.3	11.6	55.9	32.5
1998	8.5	61.3	30.2	13.0	57.9	29.1
2003	6.8	56.9	36.3	15.1	54.5	30.4
2010	22.0	65.4	12.6	29.0	56.3	14.7
2014	24.1	65.6	10.3	30.3	56.2	13.5
2016	28.4	63.6	8.0	38.8	52.6	8.6

[a] data for the last three years above are not fully comparable to the previous years, as households of employees running an agricultural holding were no longer distinguished.
Source: CSO data (for 1989, 1995 and 1998 as cited in: [Kwasek 2002, p. 71, Table IV.11]); data for 2016. Situation of households in 2016 in view of household survey results. Information note of the CSO, 2 June 2017, Figure 26.

5. Sustainability of family agriculture

It is very complicated to measure the sustainability of agriculture given imperfect measurement methods and difficulties in accessing necessary data. Nevertheless, such attempts are made based on CSO, FADN and survey data. Their results were made available in numerous publications – *inter alia* in [Toczyński et al. 2013; Wrzaszcz 2012].

The studies revealed that the macroeconomic assessment of Polish agriculture in terms of sustainability was not clear-cut. In most cases considered in the context of the sustainable development of agriculture, a desired direction of changes was observed, especially following Poland's accession to the European Union. In **economic** terms, the effectiveness of agricultural production and the economic condition of agricultural holdings improved despite price scissors unfavourable for agriculture. Agricultural production increased, so did its marketability. The income of farmers grew as well, but the transfer of financial resources related to mechanisms of the Common Agricultural Policy was crucial in this respect. However, the agricultural income of most households was not

enough to ensure their development (wealth reproduction) and satisfactory remuneration for labour.

Multidirectional trends in **environmental** sustainability were recorded. Some indicate the deterioration of agricultural space, especially landscape and soil. In particular, the share of cereal in the structure of used arable land is too high, while the share of structure-forming plants is too low, thus negatively affecting the condition of soil. The content of assimilated macronutrients (phosphorus, potassium, magnesium) in soil is unfavourable, while soil acidification is high. The condition of soil is also determined by hydrological conditions which are affected by growing land reclamation neglect. A downward trend in soil organic matter content, i.e. in soil fertility and fecundity, is unfavourable. Over half of arable land has low and medium organic matter content. Both a downward trend in natural and organic fertilisation as well as the soil structure, which is unfavourable for maintaining soil quality, make soil humus content decrease. A decrease in the animal population, the abandonment of practices related to the incorporation of crop straw and the small-scale cultivation of structure-forming plants are the main causes of the deteriorating balance of soil organic matter. Positive trends can include an increase in the area of winter green cover. In the context of climate change, greenhouse gas emissions from agriculture are significant, i.e. about 30 million tonnes (in CO_2 equivalent), and have followed a downward trend since the early 1980s. Greenhouse gas emissions per 1 ha of UAA are about 2.3 tonnes of CO_2 – more than e.g. in Bulgaria (about 1 tonne of CO_2), but less than in Germany (3.5 tonnes of CO_2) and especially in Belgium (6.7 tonnes of CO_2) and the Netherlands (9.9 tonnes of CO_2)[58].

The deteriorating demographic structure of the agricultural population (youth population is decreasing and it is increasingly unwilling to run an agricultural holding), the unsatisfactory level of education of managers of agricultural holdings (hampering the implementation of modern labour organisation techniques and methods, desired agro-technical practices and pro-environmental activities) draw attention when assessing the sustainability of agriculture in **social** terms. Although the living standard of agricultural families is improving, it is still much lower than that of the urban population.

In conclusion, the assessment of the sustainability of Polish agriculture is not clear-cut. On the one hand, Polish agriculture retained its family character, avoided soil contamination by excessive mineral fertilisation and chemical plant protection, has so far avoided the overconcentration of animal production, the disparity of income decreased and the level of education of users of agricultural holdings significantly improved, so did technical infrastructure in rural areas. On

[58] According to FAOSTAT data – as cited in [Kagan 2016, pp. 18 and 21].

the other hand, agricultural land loss is too high, livestock breeding is being abandoned (about 40% of holdings of over 1 ha of UAA do not keep livestock). More than half of holdings have a negative balance of soil organic matter, the use of chemical fertilisers and plant protection chemicals is back on the rise, the share of cereal in the crop structure is too high.

The level of agricultural sustainability was also assessed in terms of agricultural holdings, while focusing on the environmental aspect and taking the fulfilment of environmental thresholds as the primary measure. The study covered agricultural holdings engaged in agricultural activity, covering at least 1 ha of UAA, broken down into groups of individual holdings and holdings owned by legal persons, meeting selected environmental sustainability criteria (Table 25). Obviously, it is not so much about the number of holdings, but about their production potential, in particular UAA.

Table 25. Holdings of at least 1 ha, meeting environmental sustainability criteria (%)

Sustainability criteria[a]	In total			Owned by legal persons			Individual		
	Holdings[b]	UAA	Production[c]	Holdings[b]	UAA	Production[c]	Holdings[b]	UAA	Production[c]
Cereal	22.2	32.1	35.1	42.4	60.3	58.4	22.2	28.5	32.6
Green cover	52.9	64.2	62.4	60.3	79.0	84.5	52.9	62.3	60.1
Plant groups	19.0	35.2	36.4	32.8	59.4	65.0	19.0	32.2	32.3
Stocking density	97.5	97.2	85.2	97.6	98.5	78.6	97.5	97.1	87.5
Organic matter	39.4	47.0	43.0	52.1	58.3	46.0	39.4	45.6	42.7

[a] sustainability criteria: cereal – the share of cereal in the crop structure: up to 66%, green cover – the share of area of winter plants in the crop structure on arable land: at least 33%, plant groups – at least 3 plant groups cultivated on arable land, stocking density – no more than 2 LUs (livestock units) per 1 ha of UAA, organic matter – a positive balance of soil organic matter; [b] number of holdings; [c] value of standard output
Source: [Zegar 2014, p. 44, Table 4].

The data compiled in Table 25 indicate that the current state of sustainability significantly deviates from the desired one. It is especially true for soil organic matter and the diversity of crops.

Conclusion

The agrarian question is related to the process of economic growth and thus to increasing the material well-being of society. The key element of this process, which is referred to as "industrialisation" or "complete modernisation", was the transformation of agriculture – incorporation into capitalist market economy rules and capital circulation. This transformation, i.e. the industrialisation of agriculture, took place at the expense of peasant deprivation and elimination as indicated by the historical experience of many today's highly developed countries. However, it was necessary – as generally believed – for the process of economic growth to be successful as required by the provision of cheap labour, cheap food and capital. Only after many years, when there were only few peasants transformed mostly into farmers, it was possible to lift the agricultural population out of poverty and to eliminate income disparities thanks to state intervention. The State thus took on the role of tackling effects of spontaneous capitalist market mechanisms, be it directly by market intervention or by offsetting effects of the market. The process of subordinating agriculture to capitalist market economy rules did not end with the farmerisation of agriculture – the transformation of peasant holdings into family enterprises – the emergence of corporate agricultural enterprises, but it is still ongoing. Farmers' holdings, just like viable family agricultural holdings, are integrated into vertical food chains (agribusiness links) and the influence sphere of financial capital providers.

The success of overall economic growth in the age of capitalism, involving GDP growth, the effective use of rising labour resources, improving material well-being and food safety (cheap and abundant food) had a high cost to be paid. How high? We do not know yet, since all effects of using non-renewable resources, excessively using renewable resources, in particular reducing biodiversity and reducing the provision of many ecosystem services, are unknown. There is still the need for better recognising the quality of food and of products of industrial agriculture in general, and health effects which then require investment in healthcare and decrease human activity. Benefits of high productivity in industrial agriculture and migration from agriculture (primarily from peasant holdings) to higher productivity sectors, hence growth in overall material well-being, need to be adjusted for yet-unknown effects of abolishing the great social class (peasants) and for the loss of cultural values and centuries-old tradition. It may be concluded that the full social value of food products, taking into account their social production costs, is still unknown.

Poland undergoes intensive agricultural transformation. Its political transformation into the capitalist free market economy created political and legal conditions for the industrial transformation of agriculture, while its accession to the

European Union and covering Polish agriculture with CAP mechanisms provided necessary funds. At the same time, there was an increase in the demand for labour force engaged more or less in agriculture (labour force being pulled into non-agricultural sectors) which, along with foreign emigration, not only "remove" the actual surplus of labour resources, but also reach for agricultural resources which is facilitated by a flow of means of production, in particular agricultural technology, placed at the disposal of agricultural holdings. The ongoing technological advancement (especially mechanisation) of agriculture, specialisation and concentration reduce the overall demand for labour. Rapid cultural changes, including the increased level of education, increased aspirations and the falling birth rate give potential successors a number of choices, i.e.: taking wage employment (definitely opting out of agriculture or combining wage employment with an auxiliary holding), starting own business (based on resources of an agricultural holding – e.g. agritourism activity, recreational activity, caring activity, or unrelated to an agricultural holding) and continuing agricultural activity (a farmer's holding or an ecological holding).

The industrialisation of agriculture is embedded in specific natural (land resources) and socio-economic conditions. It is thus difficult to expect that Western European agriculture will faithfully follow the U.S. path, and Polish agriculture – e.g. the British path. It is hard not to notice emerging barriers of industrial agriculture (commercialisation, industrial intensification, concentration and specialisation). In particular, there is a growing gap between industrial agriculture and non-transferable social objectives: food safety, the preservation of the natural environment and ecosystem functions, farmers' welfare and rural viability.

The general conclusion can be put down to an increasingly evident contradiction between solving the classic agrarian question by industrial means and the sustainable development of agriculture. However, the classic agrarian question in contemporary Poland loses its importance with respect to two important elements. Firstly, peasants (individual farmers) are not in a deadlock at present – they are not condemned to inevitable deprivation, as was the case with the classic agrarian question. They can use their labour resources outside agriculture – definitely opting out of agriculture or undertaking non-agricultural activity based on resources of their holding. Secondly, the primary accumulation of capital is no longer relevant, as such capital is not only available, but it is even imposed by financial markets. Thirdly, opening up to the world means that providing cheap and abundant food is increasingly based on the global market, not on the domestic market. The new concept of the agrarian question in contemporary Poland needs to be associated with family agriculture's capacity to achieve the above social objectives of sustainable development of agriculture.

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