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EFFECT OF GLOBAL POVERTY REDUCTION ON WILD ANIMAL WELFARE

VLIV SNIŽOVÁNÍ SVĚTOVÉ CHUDOBY NA WELFARE VOLNĚ ŽIJÍCÍCH ZVÍŘAT

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I hereby proclaim that I wrote the bachelor thesis on my own and that the references include all resources and literature I have used. This thesis or its fundamental parts have not been used previously for acquiring another university degree.

In Prague, May 8, 2019

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Effect of global poverty reduction on wild animal welfare

Abstract

This thesis aims to find a connection in the form of theory or economic model between two concepts - world poverty and wild animal welfare. By synthesising contemporary knowledge, we aim to answer the question of whether there are scientifically-based explanations for the relationship between decreasing global poverty and welfare of wild animals. We also aim to answer the question of whether the welfare of wild animals is worsening or improving with declining global poverty. Assuming that animals are sentient beings, their welfare is negatively affected by the variety of human activities. These activities can be undertaken by humans intentionally (e.g. hunting) or unintentionally, with the industrial activities leading to the disruption of animal habitats or chemical contamination of the biosphere. We approach the problem of reducing global poverty on wild animal welfare in two ways. First, we find an explanation of the relationship between the growth of society's wealth and environmental degradation from a macro-perspective using the environmental Kuznets curve and its derivative – animal welfare Kuznets curve. Using these curves, however, the interpretation of the impact of poverty reduction on wild animal welfare can only be very limited. Instead, we propose the need for a wild animal welfare Kuznets curve. The second perspective is qualitative, comparing the legislative and institutional framework of the four countries selected by their GDP per capita. We find that even economically more developed countries with lower poverty headcount ratio may have weaker legislative protection for wild animal welfare than less developed countries with higher levels of extreme poverty. However, the representativeness of this thesis is limiting in this regard due to the low number of countries compared. It would be appropriate in future to conduct research on the dependence of GDP per capita and legislative protection of wild animal welfare comparisons incorporating more countries. The objectives of the thesis were met, the link between the two concepts was found through the Environmental Kuznets Curve model, and a qualitative approach offers a direction for further research in this multidisciplinary area.

Keywords: global poverty, wild animal welfare, environmental Kuznets curve, wild animal welfare Kuznets curve, impacts of human activities, habitat disruption, legislation for animal protection

Vliv snižování světové chudoby na welfare volně žijících zvířat

Abstrakt

Cílem této práce je nalézt propojení ve formě teorie nebo ekonomického modelu mezi dvěma koncepty – světovou chudobou a welfare volně žijících zvířat. Syntézou současného poznání se snažíme odpovědět na otázku, zdali v současnosti existují vědecky podložená vysvětlení pro vztah mezi klesající světovou chudobou a welfare volně žijících zvířat. Také se snažíme odpovědět na otázku, zdali se s klesající světovou chudobou spíše zhoršuje nebo zlepšuje welfare volně žijících zvířat. Za předpokladu, že jsou zvířata cítícími bytostmi je jejich welfare negativně ovlivňován dopady lidských činností. Tyto činnosti mohou být ze strany člověka podnikány úmyslně (např. lov) nebo neúmyslně, kdy se jedná o celou škálu průmyslových činnosti vedoucí k narušení habitatů zvířat, popřípadě dochází k chemickému znečištění biosféry. K problému vlivu snižování světové chudoby na welfare volně žijících zvířat přistupujeme dvěma způsoby. Za prvé se snažíme nalézt vysvětlení vztahu růstu bohatství společnosti a environmentální degradace z makro-perspektivy. Vysvětlení nalézáme prostřednictvím environmental Kuznets curve a její odvozeniny – animal welfare Kuznets curve. Pomocí těchto vztahových křivek však lze vliv snižování chudoby na welfare volně žijících zvířat vysvětlit jen velmi omezeně. Místo nich vybízíme k zavedení Wild animal welfare Kuzntets curve. Druhá z perspektiv této these tkví v kvalitativním přístupu, kdy porovnáváme legislativní a institucionální rámec čtyř zemí vybraných dle jejich HDP na obyvatele a zjišťujeme, že i ekonomicky vyspělejší země s nižší mírou extrémní chudoby mohou mít slabší legislativní ochranu welfare volně žijících zvířat než méně rozvinutější země s vyšší mírou extrémní chudoby. Representativnost tohoto přístupu je ale v této thesi omezující kvůli nízkému počtu porovnávaných zemí. Proto by bylo v budoucnosti vhodné provést výzkum závislosti HDP na obyvatele a legislativní ochranu welfare volně žijících zvířat a do studie zahrnout více zemí. Cíle práce byly naplněny, podařilo se nalézt propojení mezi oběma koncepty snižováním světové chudoby a welfare volně žijících zvířat prostřednictvím modelu environmentální Kuznetsovy křivky a pomocí kvalitativního přístupu byl naznačen směr pro další výzkum v této problematice.

Klíčová slova: světová chudoba, welfare volně žijících zvířat, environmentální Kuznetsova křivka, dopady lidských činností, narušení habitatu, legislativa na ochranu zvířat

CONTENTS

ABBREVIATIONS AND ACRONYMS

API	Animal protection Index
AWKC	Animal welfare Kuznets curve
CDC	The Cambridge Declaration on Consciousness
EKC	The environmental Kuznets Curve
FMH	Austrian Federal Ministry of Health
GDP	Gross domestic product
PPP	Purchasing power parity
UDAS	A Universal Declaration on Animal Sentience
WAP	World Animal Protection

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Introduction

Human poverty and animal welfare – these two concepts are currently widely discussed, but each one is addressed separately with no visible link, which would connect these two concepts together. According to the World Bank (2018) world poverty substantially declines every year. At the same time, thanks to the advancement in academic research and availability of information to the public, people are becoming increasingly aware of the idea, that animals could be sentient beings with their own basic needs. Since wealth growth might be linked with more intensive human interventions in nature, these effects of human activity can have a detrimental effect on the welfare of wild animals.

As this thesis has the basis of an exploratory study, our objective is to find a missing link between concepts of human poverty reduction and wild animal welfare. The central research question is whether there exist pieces of evidence of the reduction of global poverty affect wild animal welfare, and if so, does the effect is rather positive or negative? The minor aim is to detect, which theories or existing data could help to answer the research question.

The thesis is divided into four chapters. The first chapter discusses the indeterminacy of animal consciousness, considered to be a very complex biological phenomenon, even nowadays. Its comprehension is, however, essential for the issue of animal welfare. The term animal welfare is subsequently expounded in Section 1.2.

In the second chapter, we discuss the varieties of human activities that might have a negative impact on wild animal welfare (such as habitat disruption and air pollution), while in the process of this section, we left aside the parameters of poverty and economic growth.

In chapter three we look into the concern of global poverty, and we approach the poverty and wild animal welfare issues from macro-perspective. Our aim in this part is to search for a reference for an existing economic model which could explain, that wealth is growing in society, but also environmental degradation occurs. We find that such a relationship can be observed through the environmental Kuznets Curve.

In chapter four we approach the relationship between poverty and animal welfare from the qualitative aspect. We select four countries by their GDP per capita, PPP (the Republic of Niger, the Republic of India, the Russian Federation, the Republic of Austria) for comparison by indicators of legislative frameworks for the protection of wild animal welfare, quality of institutions, government effectiveness and the rule of law. These indicators are then evaluated with regard to parameters of GDP per capita of these states, as well as their poverty headcount ratio.

Chapter 1

The basis for animal welfare study

To this day, many scientists from fields of natural science such as neurobiology, ethology, physiology claim that the human and even nonhuman consciousness is one of the most elusive and challenging to study of any biological phenomenon (Dawkins, 2015). In the case of animal consciousness, the matter it is even more complicated as there exists no direct evidence, that the animals possess it. What do we have so far is an "accumulation of strongly suggestive evidence increases significantly the likelihood that some animals experience at least simple conscious thoughts and feelings" (Griffin & Speck, 2004, p. 5). Understanding of animal awareness is essential for concerning animal welfare, but it is not the only reason why we should address the animal welfare matter, as we discuss in Section 1.2.2.

1.1 The issue of animal consciousness

One of the most emphasised issues of animal consciousness, very often presented by academics from the humanities and social sciences, rests in the problem of "essentially subjective and private nature of conscious experiences" (Dawkins, 2015, p. 26). In other words, the contents of the conscious experience are known only to human or nonhuman respective individual - each human and each animal have a particular mind. The most common method for measuring conscious human experiences is the use of verbal self-report, based on introspection (LeDoux & Brown, 2017, p. E2017). Though, this according to Dawkins (2015, p. 26) leaves the concept of animal consciousness currently out of the possibility to be studied by usual methods of science.

It might be true, the animals cannot tell us verbally what they like or dislike, what they prefer or what they would like to avoid, but we agree with Dawkins (2015, p. 11) "their behavior can, in various ways, be used as a convincing substitute". When describing and interpreting the behaviour of animals, we admit, that one should be aware of possible anthropomorphism – using human terms to explain animal emotions or feelings (Bekoff, 2000, p. 867).

Clearly, animals are not able to convey their contents of consciousness through verbal communication, as humans can do. Notwithstanding, their nonverbal behaviour can indicate, that they might be "conscious in the sense of being awake and responsive to stimuli, and for

demonstrating cognitive capacities underlying working memory, attention, metacognition, problemsolving ability, and other indicators of intelligent behavior" (LeDoux & Brown, 2017, p. E2017). On the other hand, the same authors (LeDoux & Brown, 2017, p. E2017) add, that nonverbal behaviour alone is generally not sufficient to demonstrate conscious awareness, because not all cognitive processing leads to conscious experience. However, ultimately that would mean the animals are capable of mastering cognitive tasks unconsciously (Roth, 2000 as cited in Griffin & Speck 2004, p. 8), which seems to be quite ambiguous.

1.1.1 Phenomenal consciousness in animals

On account of cognitive capacities, Ned Block (1995 as cited in Dawkins, 2015, p. 4) revealed, that two types of consciousness might exist. The first is called access consciousness, which embodies the ability to think and reason and the second one, called phenomenal consciousness comprehends concepts such a sensation of pain and pleasure. Behind these two different sorts of consciousness, Miriam Dawkins (2015, p. 4) sees the former development of two disciplines: (1) on access consciousness based cognitive ethology, concentrated on the intellectual abilities of animals and (2) animal welfare science "concerned with phenomenal consciousness (sometimes called 'sentience') and in particular whether animals could feel pain and experience positive and negative emotions" (Dawkins, 2015, p. 4). The second approach, phenomenal consciousness, will be crucial for this thesis, as our view of animal welfare is based on this presumption.

In the last decade, two essential declarations regarding phenomenal animal consciousness were published in the field of science. The first one called The Cambridge Declaration on Consciousness (CDC) (Low et al., 2012, para. 6) declares the following:

The absence of a neocortex does not appear to preclude an organism from experiencing affective states. Convergent evidence indicates that non-human animals have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states along with the capacity to exhibit intentional behaviors. Consequently, the weight of evidence indicates that humans are not unique in possessing the neurological substrates that generate consciousness. Nonhuman animals, including all mammals and birds, and many other creatures, including octopuses, also possess these neurological substrates. (Low et al., 2012, para. 6)

There is no doubt that this declaration has attracted interest and brought a serious discussion. In response to the CDC, the following declaration, which is rather unofficial, was established by Marc Bekoff (2013) and the provision was named a Universal Declaration on Animal Sentience (UDAS). In UDAS, Bekoff (2013) submits an appropriate extension of the CDC to fish, and adds a concept of sentience, under what Bekoff (2013, para. 4) understands "the ability to feel, perceive, or be conscious, or to experience subjectivity". The idea of animal sentience is supported by many scientists (names of the academics are not mentioned in the proposition), but the idea is also opposed by Marian Dawkins, who according to Bekoff (2013), is one of the few scientists left who does not explicitly recognise animal consciousness so far, after the release of the CDC.

1.1.2 Criticism of phenomenal consciousness in animals

Dawkins (2015) claims that animal consciousness is still a problem that we cannot study directly and with current scientific methods. Meanwhile, we can take into account manifestation of animal behaviour to what Dawkins (2015, p. 25) calls 'behavioral correlates of consciousness': „[w]hat animals want, what they will work for, and, in particular, what they find positively and negatively reinforcing are the nearest approaches we can currently make to animal consciousness". Also, Griffin & Speck (2004, p. 6) support the idea that animals make their own choices and are aware of adverse objects and events, which they want to try to avoid or make them fear.

Even though animal consciousness could not be solved by current scientific methods, as Dawkins (2015) states, it does not mean that the animals are not endowed with phenomenal consciousness, but rather it means there is no 100% certainty of it. The concept of animal consciousness can be proven thoroughly in the near future by systematic studies of ethology, neurobiology or artificial intelligence (Bekoff, 2006; Tomasik, 2017) as progress in technology might bring new access to knowledge, along with more attention and resources (both human and financial) invested into the research.

1.2 Animal welfare

Currently, there exists no unified definition of animal welfare, which would be globally accepted. For example Mellor and Reid (1994 as cited in Feber et al. 2017, p. 62) "identified five interacting welfare domains (nutritional, environmental, health, behavioral, and mental) and described "good welfare" as existing when an animal's needs in these five domains are fundamentally being met". Some other definitions place the feelings (of suffering pain and pleasure) as the main components (e.g. Duncan, 1993 as cited in Dawkins, 2015, p. 24) and other definitions are convinced by good welfare being met to what extent the animal's behaviour is 'natural' (Bracke & Hopster, 2006; Lund, 2006 as cited in Dawkins, 2015, p. 24) and last but not least, Yew-Kwang Ng (1995) defines welfare as net happiness, or enjoyment minus suffering.

1.2.1 The Universal Declaration on Animal Welfare

As the most sophisticated definition, we find The Universal Declaration on Animal Welfare (UDAW) created by World Society for the Protection of Animals (WSPA, 2011), a non--governmental organisation nowadays known as World Animal Protection. Aim of the authors of this declaration is to make the UDAW to be accepted worldwide by the as most Member States of the United Nations as possible. In Article I this document declares animals as sentient beings, while sentience is more specified in Article III (WSPA, 2011) as "the capacity to have feelings, including pain and pleasure, and implies a level of conscious awareness". Finally, Article II emphasises animal health with a reference both to the physical and psychological state of the animal. "The welfare of an animal can be described as good or high if the individual is fit, healthy, free from suffering and in a positive state of wellbeing" (WSPA, 2011).

The term "welfare" of wild animals used in subsequent chapters of this thesis will be in accordance with the definition of UDAW (WSPA, 2011). Another concern is which wild animals are supposed to be considered as sentient and which do not. There is no clear answer to this question; however, a study of Sneddon, Elwood, Adamo, & Leach (2014) revealed that the most vertebrates (including *Mammalia, Aves, Amphibia, Reptilia, Agnatha, Osteichthyes*) are considered to feel pain by certain possibility. But, concerning The Cambridge Declaration on Consciousness, we can assume, without a more significant detraction of objectivity, that at least welfare of all wild mammals and wild birds, shall be taken seriously.

1.2.2 The objectivity of animal welfare

In case of criticism against the submitted declarations (CDC, UDAS, UDAW) explicitly recognizing phenomenal consciousness to be present by certain animal classes, still we can deal with objects of Animal Welfare science, by focusing on two basic elements, which are grounded on objective observations, i.e. animal physiology and animal behaviour (Dawkins, 2015, p. 25). In another word, Animal welfare science can study the well-being of animals independently of proving the animals are conscious. Good animal welfare could still be addressed by the concern of the animal's good physiological health and a possibility to decide for itself, meaning the animal is not disturbed by interference from the environment. To grant an example, the animal being trapped by a hunter is not considered to have good welfare.

Next chapters of the thesis will be concerned about human impacts depending on poverty and economic development and how these aspects affect the welfare of wild animals. Phenomena reducing animal welfare considered to be a "naturally" bound to ecosystems such as predation, starvation, diseases, excessive cold or heat, or natural disasters are not considered in this thesis, as these are not directly caused by human activities or lack predictability. For animal suffering concerning causes not rooted in human activities, we could refer to Delon & Purves (2018); Sözmen (2013) or Tomasik (2017).

Chapter 2

Impacts of human activities on wild animal welfare

According to the Millennium Ecosystem Assessment 2005 (as cited in Paquet & Darimont, 2010, p. 177), more than two-thirds of the world's terrestrial land area has been devoted directly to supporting human populations through agriculture, fisheries, urbanisation, or infrastructure. The current growth of world population embodies large scale human activities such as "crop production, forest management, resource extraction, industrial manufacturing, urban development and transportation" (Fraser & MacRae, 2011, p. 3) affecting the welfare of wild animals in huge scale.

On the field of ecological studies nowadays, it is more than obvious, that "the adverse influence of humans on the environment is intensifying, causing an unprecedented destruction of biodiversity, and raising vexing questions about the ethical foundation of contemporary society (Wilson 2006; United Nations Environment Programme 2007)" (Paquet & Darimont, 2010, p. 177). Besides the unpleasant question on environmental degradation, there also emerge issues touching animal welfare problems such as pain, distress and ill health of sentient wild animals (Fraser & MacRae, 2011, p. 3), being part of the afflicted environment.

2.1 Intended versus unintended activities

Faber et al. (2017) infer that anthropogenic activities might have either direct or indirect effects on wild-animal welfare through both intended and unintended actions. "The disruption of ecosystems, for example, through habitat fragmentation or climate change (Mathews 2010, Kirkwood 2013), may have widespread but less obvious welfare consequences for wild animals (e.g., via affecting their food supply or other habitat requirements)" (Feber et al., 2017, p. 63). Bradshaw et al. (2005, as cited in Paquet & Darimont, 2010, p. 178) link those types of human activities with the current extinction crisis, activities which "causing suffering, fear, physical injury, psychological trauma, and disease in wild animals. These discomforts are well beyond and additive to what might occur naturally (i.e. non-anthropomorphic)."

Authors Paquet & Darimont (2010, pp. 186–187) point to an association between human-caused ecological degradation and the distress of wildlife. "Most people do not want animals to suffer, but they are reluctant to take measures to prevent degradation of the environment". From this scope of view suffering of animals could be then referred to as an "unintended and ignored outcome of anthropocentrism" (Paquet & Darimont 2010, pp. 186–187).

As mentioned above, many human damaging actions towards wildlife are intended. "Fuller et al. (2002) summarise all the various means by which humans purposely cause harm and (typically, but not always) death to wolves. These include but are not limited to aerial hunting, deadfall traps, large fishhooks, guns, poisoning, snares, and traps" (as cited in Paquet & Darimont, 2010, p. 183). There is no doubt these actions cause an unnatural source of suffering for wild--living wolves. Fraser & MacRae (2011, p. 9) suggest that intended human actions towards wild animals usually attract more public attention than unintended ones, which have the higher scale and greater impact in general – for instance driving cars, "which almost certainly kills and injures vertebrate animals in greater numbers" by accident.

It was observed, that the release of toxic chemicals into the environment as well, as the spread of disease organisms have caused both immediate and long-term harm to animals. (Fraser & MacRae, 2011). In the view of Colborn (1994, p. 55), "the environmental load of synthetic chemicals has reached critical levels at which wildlife and human health are at risk" (as cited in Fraser & MacRae, 2011, p. 7).

2.2 Air pollution

Harmful effects of industrial air pollutants on vertebrate wildlife was documented in a paper by Newman (1979). His study revealed a correlation between significant reductions in vertebrate wildlife population and industrial air pollution. The pollution inflicts debilitating injuries, often causing death of animals and also diseases such as fluorosis or arsenic poisoning. The industrial effects also reflect in lower chances of survival of wildlife during times of natural stress (Newman, 1979, p. 188).

The impacts of air pollution on wildlife can be both direct and indirect. "Although birds and mammals are not directly affected by water acidification, they are indirectly affected by changes in the quantity and quality of their food resources. Some birds such as the osprey, find difficulty in living around an acid lake because there are far fewer fish to be found" ('Impacts of Air Pollution & Acid Rain on Wildlife', n.d., para. 12). And less food for wild animals essentially means more individual suffering, if considering only human activity related issues of animal welfare and not natural causes such as predation, starvation, diseases etc.

2.3 Habitat disruption

Many authors (e.g. Czech, 2013; Paquet & Darimont, 2010; Grooten & Almond, 2018) agree that one of the most important sources of wild-animal suffering is habitat destruction. **"**Habitat includes food, water, cover, and space. When any of these components are eliminated or degraded, wild animals suffer and many die, often in more insidious, protracted, and torturous ways than if killed or crippled by a hunter or natural predator" (Czech, 2013, p. 171). The welfare of animals that lost their habitats seems to be appreciably more negative compared to animals living in natural conditions, which disposing of natural requisites.

2.3.1 Terrestrial habitats

To grant an example from the wild, Paquet & Darimont (2010) mention that many human activities causing fragmentation and isolation of natural habitats might have undesirable effects on large carnivores. "The scale of fragmentation relevant to these animals is most frequently caused by construction of roads, railways, agriculture, and logging" (Paquet & Darimont, 2010, p. 181). For support the thought, that roads and transport raise important wild-animal welfare issue B. Czech (2013, p. 173) argues, that "[t]he damage that highways inflict on wildlife is not limited to direct mortality. It starts with the destruction of habitat and continues with the construction of the road itself, which causes more wildlife mortality. Chemical and physical alteration of the surrounding environment and introduction of potentially invasive species accompany the construction and use of roads".

2.3.2 Water habitats

When we think of habitats, most people will probably tend to recall some terrestrial (overland) environment. Grooten & Almond (2018, p.7) point out, that freshwater habitats, such as lakes, rivers and wetlands, are just as crucial as terrestrial ones. As was discussed in Section 1.2.1, the fish and amphibians occupying these habitats are capable of feeling pain by a substantial possibility. On account of the condition of freshwater habitats, Grooten & Almond (2018, p.7) emphasize that these habitats are an important source of life for all humans. "Yet they are also the most threatened, strongly affected by a range of factors including habitat modification, fragmentation and destruction; invasive species; overfishing; pollution; disease; and climate change". Nor seawater is spared of the adverse impacts of human activities on wild animal welfare, as Grooten & Almond, (2018, p. 7) states, that since 1950 almost 6 billion tonnes of fish and invertebrates have been depleted from the oceans.

Brian Czech (2014, para. 6) states, that when we hear of human activity, it is usually linked to the cause of habitat loss. The main concern Czech (2014, para. 6) finds in a fact, that environmentally harmful human activities are rarely independent on the economy. A parameter of the economy is significant regarding environmental issues caused by society. In the next section of this thesis, a focus will be on the economic determination of environmental impacts by human activity. Notably, the effect of global poverty on the environment along with wild-animal concern discussed above.

Chapter 3

Global poverty and environmental degradation

"Fewer people are living in extreme poverty around the world, but the decline in poverty rates has slowed, raising concerns about achieving the goal of ending poverty by 2030 and pointing to the need for increased pro-poor investments", says article by The World Bank (2018, para. 1). In this chapter, we try to find an answer whether there exists an economic model which could explain, that wealth is growing in society, but also environmental degradation occurs.

3.1 A declining trend in extreme poverty

The number of people living on less than $1.90 a day fell during years 2013-2015 by 68 million to 736 million (which is 10 % of the world population) (The World Bank, 2018, para. 2). To support the evidence of the current reducing trend of global poverty, an estimation of World Poverty Clock (World Data Lab, n.d.) indicates that since January 2016 till April 2019, more than 82 million of people have escaped extreme poverty.

Table 1 summarises poverty estimates in 2013 and 2015, in world regions and worldwide. "The international poverty line is currently valued at $1.90 in terms of 2011 purchasing power parity, which equalizes its purchasing power across all countries and currencies" (The World Bank, 2018). An apparent increase of poverty in The Middle East and North Africa regions, which had previously been below 3 per cent in 2013, was caused mainly by conflict in Syria and Yemen in 2015.

Table 1: Poverty at the International Poverty Line of $1.90/day (in 2011 PPP)

Region	Headcount ratio (%)		No. poor (millions)	
	2013	2015	2013	2015
East Asia and Pacific	3.6	2.3	73.1	47.2
Europe and Central Asia	1.6	1.5	7.7	7.1
Latin America and the Caribbean	4.6	4.1	28.0	25.9
Middle East and North Africa	2.6	5.0	9.5	18.6
South Asia	16.2	12.4	274.5	216.4
Sub-Saharan Africa	42.5	41.1	405.1	413.3
World Total	11.2	10.0	804.2	735.9

Source: (The World Bank, 2018)

The decreasing trend of global poverty is appreciable, and it can be presumed that to those, who had escaped the poverty line defined above it should reflect raise at global human well-being (e.g. Grooten & Almond, 2018). However, the main topic of this thesis deals with global poverty reduction effects related to the welfare of wild animals.

Within the context of neoclassical economists view of economic growth, which looks at the growth principally as it was a benchmark of societal progress (Heilbroner, 1992 as cited in Paquet & Darimont, 2010, para. 179), "the decline of nature has been considered a measure of the success of an enterprising economy. Thus, given the irrefutable association between environmental destruction and the suffering of individual animals […], contemporary economics is in conflict with the goals of conservation and animal welfare" (Paquet & Darimont, 2010, p. 179).

The study of Rizk & Slimane (2018, p. 31461) asks an unanswered question whether poverty is the main cause of environmental degradation or whether environmental degradation increases up poverty levels or both are correlated and self-reinforcing. The authors (Rizk & Slimane 2018, p. 31461) also reference to studies (Khan and Khan 2009; Nayak 2010; Roca et al. 2001 as cited in Rizk & Slimane 2018, p. 31461) "showing that environmental degradation is not associated with poverty in the sense that both poor and non-poor are equally resource dependent".

3.2 Environmental Kuznets Curve

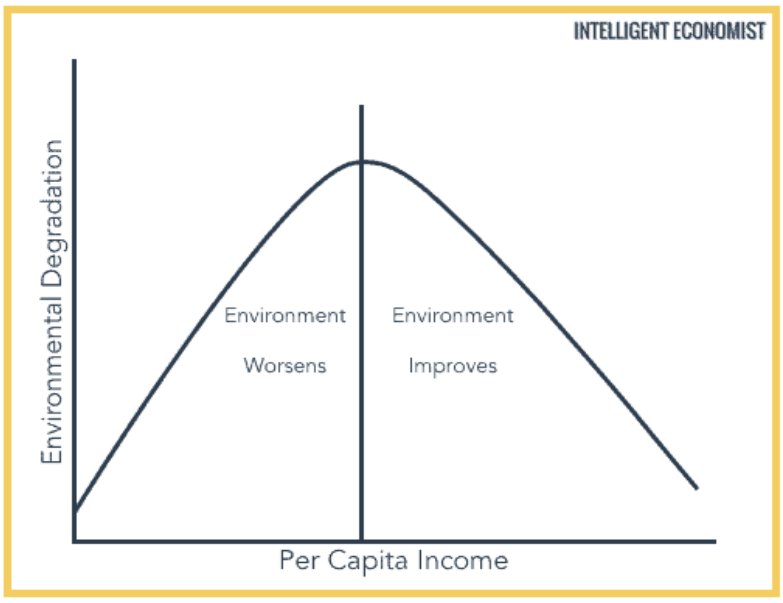
If it can be presumed, that wild-animals do suffer from environmental degradation (e.g. Czech, 2013; Paquet & Darimont), we found that the environmental Kuznets curve (EKC) might help to explain an association between various indicators of environmental degradation and income per capita (Stern, 2004, p. 1419).

B. Czech finds (2008, p. 1392) three hypotheses representing the EKC:

1. There is a fundamental conflict between economic growth and environmental protection.
2. This fundamental conflict is resolved when enough economic growth occurs.
3. When enough financial wealth accumulates, especially in per capita terms, society successfully refocuses on solving environmental problems.

The process of the EKC can be explained in a way, that "[i]n the early stages of economic growth degradation and pollution increase, but beyond some level of income per capita, which will vary for different indicators, the trend reverses, so that at high income levels economic growth leads to environmental improvement. This implies that the environmental impact indicator is an inverted U-shaped function of income per capita" (Stern, 2004, p. 1419). An ideal model of the EKC is illustrated in Figure 1.

Figure 1: The environmental Kuznets Curve (EKC) model



Source: (Agarwal, 2019)

However, the validity of the EKC is not fully accepted across the current field of environmental science. Thus, academic debate over the application of the EKC has not been resolved yet. For instance, B. Czech (2008, pp. 1392–1393) supports the applicability of the Kuznets curve in case of microeconomic scenarios (on a level of the nation). However, he is sceptical for the validity of a macroeconomic application of the EKC, dealing with increasing production and consumption of goods in the aggregate. In the research of environmental footprint, Dietz et al. (2007, p. 17) suggest that "[c]ontrary to the expectations of the EKC, increased affluence apparently exacerbates rather than ameliorates impacts, and, when combined with population growth, will substantially increase the human footprint on the planet."

Many authors (e.g. Dietz et al., 2007; Rizk & Slimane, 2018) dealing with the EKC theory focus primarily on the relationship between poverty and air pollutants, such as CO_2, SO_2, and particulate matter. The impact of Air pollution was mentioned earlier in Section 2.2 of this thesis.

Fewer studies set to describe the EKC model with a tight link of the effect of environmental degradation impact on wild animals. For instance, McPherson and Nieswiadomy (2005) considered the relationship between threatened bird and mammal species and per capita PPP income levels (1995 US$) using 113 countries. Their results indicate that an EKC curve may exist, for both birds and mammals. "As per capita income levels increase up to around $10,000 to $15,000, the percent of bird and mammal species classified as threatened rises. At higher income levels, the percent threatened falls" (McPherson & Nieswiadomy, 2005, p. 405). On top of that, "other factors such as political rights and civil liberties, political instability, and legal institutions may also impact species" (McPherson & Nieswiadomy, 2005, p. 405). However, it has to be mentioned, that their study is concerned for species preservation issue of wild living animals, not for wild animal welfare itself. Conservation of species is by its nature different from the protection of individual animals (Spark, 2014), as it usually concerns to only certain species of animals at a population level, and are not interested in animal subjectivity.

3.2.1 Animal welfare Kuznets curve

Classical Kuznets curve examines the relationship between an income per capita and inequality in the society; the Environmental Kuznets curve deals with income per capita and environmental degradation; J. Frank (2008) asks for a curve, that would explain a relation between economic growth and animal harm. He came with a question of the existence of animal welfare Kuznets curve (AWKC). The concept of AWKC is analogical to the EKC, "harm to animals initially ris[es] with economic growth, followed by improvement in the treatment of animals after some peak value", after which animal harm levels decrease (Frank, 2008, p. 478).

An insufficiency of Frank's (2008) and other's (e.g. Lombardini et al., 2011 as cited in Holst & Martens, 2016) AWKC-based studies is that their topic coverage is related to domestic animals only, i.e. farm, laboratory, the fur industry and companion animals. On top of that, the conclusion for Frank's (2008 as cited in; Holst & Martens, 2016) study is mixed, with the most persuasive evidence for companion animals applying to AWKC. He addresses this concern to the emotional bond between companion animals and their owners. Nevertheless, he finds no similarly decreasing levels of harm for farm animals.

Another AWKC-oriented study was made by Morris (2013, p. 272). Similar to Frank (2008), Morris's (2013, p. 272) results provide little evidence for a Kuznets effect of income on animal welfare, with the possible exception of companion animal treatment.

During the research for the topic of wild-animal welfare, no AWKC-based study related to wild-animals was found. When using the Environmental Kuznets curve (or more specifically animal welfare Kuznets curve), there can be only theoretically inferred that the wild-animal welfare copies domestic-animal welfare. The AWKC related to domestic animals, as mentioned above, was closer described by a few recent studies (Holst & Martens, 2016) and animal welfare Kuznets curve seems to be not robust, with an exception of the case of companion animals. Besides of researches made for verification of the EKC applicability, no evidence has been found, that the wild animal welfare Kuznets curve was established yet. However, an establishment of the wild animal Kuznets curve could fill a gap in current possibilities of macro-perspective exploring poverty reduction (increase in income per capita) and wild animal welfare.

Chapter 4

A relation between poverty, legislation, government and wild animal welfare

The model of the Environmental Kuznets curve suggests that increasing per capita income may have curvilinear effects on environmental degradation. Although, Kuznets curve-oriented empirical studies do not explain the impact of reducing global poverty on wild-animal welfare directly, the results of empirical studies (eg, Leão, Lobo, & Scotson, 2017; Rizk & Slimane, 2018; Stern, 2004; McPherson & Nieswiadomy, 2005) have helped reveal other significant variables that are closely related to a state's economy development and are also important for wild-animal welfare. Those variables are for instance quality of institutions, government effectiveness and the rule of law.

4.1 The basis for a qualitative comparison

As the research synthesis approach based on quantitative data has not yielded clear answer on the question how the welfare of wild animals might change if societies grow wealthier, we have decided, that this chapter will focus on a qualitative comparison of four countries. The comparison will be based on essential quality parameters of wild animal welfare at the state level – mainly, the level of recognition of animal sentience, the legislation of state that protects wild animals, way of the law is enforced, and how effective state institutions are.

Most of the information available to animal welfare in relation to institutions, legislation and government enforcement offers World Animal Protection (WAP) project (n.d.). Its authors designed the Animal Protection Index for 50 countries (9 African; 10 Americas; 13 Asian; 16 European; 2 Oceanian) compiled on the basis of several indicators, such as recognizing animal protection, governance structures and systems, animal welfare standards (for animals other than wild ones), providing humane education and promoting communication and awareness (WAP, n.d.).

With regard to the focus of this bachelor thesis on the welfare of wild animals, we decided to deeply elaborate indicators related to recognising animal protection and governance structures and systems. World Animal Protection website (n.d.) was used as the main source of legislative data. Four countries were selected for comparison according to their economic development and poverty rate. These countries were selected by two criteria: the first criterion was whether the country was implemented in the Animal Protection Index (n.d.), making a choice narrowed to 50 countries only. The second criterion was to select countries to represent different degrees of economic development with a consideration of poverty. It was done by making a list of all countries by GDP per capita, PPP (constant 2011 international $). The list of available WorldBank data ('DataBank | World Development Indicators', 2014) contains 195 countries. Quartiles were then created from this ranked list, with GDP per capita of each country falling within one-quarter of GDP per capita of the list. Countries selected according to those two criterions are – Niger, India, Russian Federation and Austria.

The average GDP per capita, PPP (constant 2011 international $) in the world was $ 14,479 in 2014. State Niger placed at 190th with an extremely low value of $ 905. Only Democratic Republic of Congo, Burundi and the Central African Republic placed below. India is above the first quantile but is still below the world GDP per capita average. Russia ranked 49th among the world's economies, being beyond the second quartile, but lags behind Austria, which according to ('DataBank | World Development Indicators', 2014) was in 2014 rated as the 17th highest economies GDP per capita worldwide.

Table 2: GDP per capita, PPP (constant 2011 international $), 2014

Country	GDP per capita ($)	world's rank (2014)
Niger	905	190
India	5385	135
Russian Federation	25285	49
Austria	44247	17

Source: ('DataBank | World Development Indicators', 2014), edited

As GDP per capita reflects the development of the economy rather than the country's poverty, a part of the second criterion was to compare Niger, India, Russian Federation and Austria according to Poverty Headcount ratio index. The latest available appropriate to international comparison is for 2011 (‘DataBank | Poverty and Equity’, 2011).

Table 3 shows, as might be expected that Niger achieves high extreme poverty values. India shows better results than Niger at all levels of poverty headcount ratios ($1.90 / $3.20 / $5.50 a day (2011 PPP)), however in 2011 India was still far from the world average which was 13.7 % of the world population spending less than $ 1.90 a day / 32.8 % of the world population spent less than $ 3.20 a day / 52.2 % of the world population spent less than $ 5.50 a day (‘DataBank | Poverty and Equity’, 2011).

In the case of Russian poverty headcount ratio, the data of DataBank (2011) suggest the grossly low share of population living in extreme poverty. At headcount poverty ratio at both $1.90 a day (2011 PPP) and $3.20 a day (2011 PPP) level, Russia achieves even better results than Austria. These data might be unclear as because poverty headcount ratio at national poverty lines (‘DataBank | Poverty and Equity’, 2011) shows that, according to Federal State Statistics Service, 12.7 % of Russian population lived below the national poverty line in 2011.

Table 3: Poverty headcount ratio at $1.90 / $3.20 / $5.50 a day (2011 PPP), 2011

2011	Niger	India	Russian Federation	Austria
Population, total (in million)	17.064	1,247.236	142.960	8.391
Poverty headcount ratio at $1.90 a day (2011 PPP) (% of population)	50.3	21.2	0.0	0.5
Poverty headcount ratio at $3.20 a day (2011 PPP) (% of population)	83.3	60.4	0.3	0.5
Poverty headcount ratio at $5.50 a day (2011 PPP) (% of population)	95.8	86.8	3.2	1.0

Source:(‘DataBank | Poverty and Equity’, 2011), edited

The following sections 4.2 – 4.5 of this thesis consist of a synthesis of laws and legislative data concerning wild animal welfare for countries Niger, India, Russia, the Russian Federation. Table 4. contains twelve available legal sources, which are referenced in reports of World Animal Protection (WAP) (2014c, 2014b, 2014d, 2014a). It is noted, that five of these legislations are available in English language, so for verification of the validity of data reference in WAP (2014c, 2014b, 2014d, 2014a) in other languages than English, Google Translate software was used.

Table 4: Legislation related to the welfare of wild animals listed by country

Country	Name of legislation	Language	Online accessibility
Niger	Law number 2004-048	French	Link
	Law number 1998-56	French	Link
	Law number 1998-07	French	Link
	Rural Code (Decree 97-008/PRN/MAG/EL)	French	Link
India	Constitution of India	English	Link
	Prevention of Cruelty to Animals Act 1960	English	Link
	The Indian Wildlife (Protection) Act 1972	English	Link
Russian Federation	Civil Code of the Russian Federation	English	Link
	Criminal Code of the Russian Federation	English	Link
	Federal Law of the Russian Federation on Wildlife (No. 52-FZ of 1995)	Russian	Link
Austria	Animal Welfare Act 2004 (Federal Law Gazette I 2004/118)	English	Link
	Penal Code (Strafgesetzbuch - StGB)	German	Link
	Burgenland Hunting Law 2004	German	Link

4.2 Recognition of animal sentience

In case of the Republic of Niger, even though animal sentience is not formally recognised in legislation, Article 21 of Law number 2004-048 (2004) enacts some limits to forms of animal's transportation, which takes into account animals psychological characteristics and well-being. This might indicate recognition of some elements of sentience (WAP, 2014c).

In the legislation of the Republic of India, sentience is also not recognised explicitly. Nevertheless, Article 9.e of the Prevention Of Cruelty to Animals Act 1960 "provides a partial recognition of sentience by making reference to both physical and mental suffering of animals" (WAP, 2014b). For example, Section 11(d) of the Act (1960) takes into account animal well-being during transport, as it is in Law number 2004-048 of Niger.

In the legal system of the Russian Federation, animals were qualified as inanimate objects until 2018, with faint recognition on animal sentience. Civil Code of Russian Federation (1994, para. 137) states following: "Toward the animals shall be applied the general rules on the property, unless otherwise stipulated by the law or by the other legal acts. While exercising the rights, a cruel treatment of the animals, contradicting the principles of humanity, shall not be admitted". However, the Federal Law N498-FZ (2018), signed on 27 December 2018 by president Putin, introduced substantial improvements of Russian government perceiving of animal sentience. Article 4(1) of the Federal Law N498-FZ (2018) states that man has a moral principle to treat animals as creatures capable of experiencing emotions and physical suffering.

The Republic of Austria implicitly recognises the concept of sentience in the Austrian Animal Welfare Act ('Federal Act on the Protection of Animals', 2004). "Whilst the concept of sentience is not explicitly defined, the Animal Welfare Act 2004 does recognise physical and mental aspects of animal sentience by prohibiting the infliction of unjustified pain, suffering or injury to animals and exposure of animals to "heavy fear" " (WAP, 2014a, p. 1).

For a summary, Austria has the most advanced recognition of animal sentence in the legislation of four countries and even worldwide (WAP, n.d.). Second might be the Russian Federation, which got ahead of India thanks to animal welfare Federal Law N498-FZ (2018). India partially recognises animal sentience since 1960. Niger is the only one of the four states mentioned, that does not recognise animal sentience explicitly in its legislation.

4.2.1 Which animal classes are considered to have sentience?

In Niger, Article 21 of Law number 2004-048 (as cited in WAP, 2014c, p. 1), grants some measure of protection during transportation of mammals, birds, fish, bees and reptiles. No other legal materials related to animal classes as subject to sentience was found.

Article 2 of The Prevention Of Cruelty To Animals Act of India (1960) defines "animal" as any living creature other than a human being. To that, article 51A (g) of the Constitution of India (1950) states "[i]t shall be the duty of every citizen of India – to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures". Animals have been important to Indian identity for millennia, yet this delimitation may seem quite vague in the legal context.

A relatively recently issued Russian Federal Law N498-FZ (2018) does not explicitly state which classes of animals are capable of experiencing emotions and physical suffering, but from the interpretation of the law, it can be deduced that all animals considered as pets are recognized to have sentience. Thereby, law enforcement can be quite problematic in case of its violation.

Paragraph 3(2) of the Austrian Animal Welfare Act 2004 ('Federal Act on the Protection of Animals', 2004) admits demonstrable sentience to vertebrates, cephalopods and decapods.

Countries of Austria and Niger have explicitly distinguished in their legislation, which classes of animal might be sentience. India animal policy seems to be laid on spiritual (or religious) elements, and Russia law lacks the delimitation.

4.3 Laws against causing animal suffering

Current legislation of Niger sets prohibition of the mistreatment of animals, (publicly or privately); however, it grants protection against suffering to domestic animals only. "[I]t appears that wild animals (whether or not in captivity) are not covered by this legislation (WAP, 2014c, p. 3).

Indian Prevention Of Cruelty To Animals Act (1960), specifies actions leading to animals cruelty in section11 (a) to (o). The Act "prohibits treating any animal as to subject it to unnecessary pain or suffering, or causing the animal to be so treated, or as the owner permitting it to be so treated" (WAP, 2014b, p. 3) except animals used in scientific experiments (being specified under section 14 in the Act (1960)).

Article 245 of The Criminal Code Of The Russian Federation (1996) contains a provision addressing cruelty to animals. World Animal Protection (2014d, p. 2) found some practical limits in its application. "Cruelty is not defined, but rather refers to two potential outcomes, namely injury or death of the animal, and such cases are addressed by law in observance of one of three cases, when cruelty is caused with malicious or mercenary motives, with the use of sadistic

methods, or in the presence of minors." In case of the law enforcement, a newspaper article from server Russia Beyond (Skripnik, 2016) says, that "[a]ccording to the RosPravosudiye jurisprudence archive, in the last 10 years there have been no more than 716 cases dealing with Article 245. In many cases the animal killers were acquitted". In Russia with a population of 144 million people, the number of opened animal abuse cases might seem quite negligible. Article 21 of the anti-cruelty Federal Law N498-FZ (2018) states that offenders bear administrative, criminal and other responsibility in the order established by the legislation of the Russian Federation. The exact form of persecution is not specified in this law. Notwithstanding, Federal Law N498-FZ (2018) does not apply to hunting and fishing, farm animals, and laboratory animals.

Austrian Penal Code (1975) creates an offence of cruelty to animals by Article 222, which states that "[i]t is prohibited to mistreat an animal or inflict unnecessary pain. Term "animal" is not defined but Article 222(3) specifically prohibits wanton killing of vertebrates, "suggesting that the general cruelty prohibition applies to any animal" (WAP, 2014a, p. 3). Regardless, Article 3(4) of the Animal Welfare Act (2004) declares that the proposition of the Act does not apply in case of hunting and fishing.

All of the countries mentioned prohibit the abuse of animals in their legislation, but the scope and enforcement vary. Each state grants legal protection against suffering only to some categories of animals according to their social utility. Niger excludes from its welfare legislation other animals than domestic ones and India has different policy regard to laboratory animals. Austrian Welfare Act (2004) is not usable concerning wild animals (i.e. hunting and fishing) and Russian policy in the latest welfare Federal Law N498-FZ (2018), not only overlooks the welfare of wild animals but also does not recognise farm and laboratory animals in legal protection against suffering.

4.4 Protecting the welfare of wild animals in law

Article 6 of law number 2004-048 of state Niger (2004) refers about ensuring a "harmonious equilibrium" between wild fauna and domestic animals, but World Animal Protection (2014c, p. 8) states that "[…] this provision does not explicitly seek to protect the welfare of wild animals."

In India, the legal framework of protection of wild animals, birds and plants is embedded in the Wildlife Protection Act (1972). For the wild animal welfare concern, it is essential, that "[t]he general anti-cruelty provisions of section 11 of the Prevention of Cruelty to Animals Act 1960 apply to this category of animals, prohibiting acts of cruelty but not prohibiting killing wild animals" (WAP, 2014b, p. 14). Though the Wildlife Protection Act (1972) restricts hunting and protects certain species from harm in an ecological sense, but does not concern about the welfare of these animals.

Similar to the policy of Niger, Russian general anti-cruelty provisions in the Penal Code are presumed to apply to wild animals, although this is not clear from the law (WAP, 2014d, p. 8). Article 1(2) of recently issued Federal Law N498-FZ (2018) affirms that the law "shall not apply to relations in the field of protection and use of fauna, relations in the field of fishing and conservation of aquatic biological resources, relations in the field of aquaculture (fish farming), relations in the field of hunting and conservation of hunting resources". According to WAP (2014d, p. 8), the most important law applicable to wild animals in the country then is the Federal Law of the Russian Federation on Wildlife (1995). By Article 12 this law promotes Russian people to "use of the wildlife by methods precluding cruel treatment of animals in accordance with common principles of humanism" ('Federal Law of the Russian Federation on Wildlife', 1995, p. 5).

Even though Article 222 of Austrian Penal Code creates an offence of cruelty to animals, the Animal Welfare Act ('Federal Act on the Protection of Animals', 2004) does not apply to hunting and fishing activities by Article 3(4). Austrian legislation relating to hunting and fishing is regulated at the state level in each of nine states. The Austrian government has confirmed to World Animal Protection organisation (2014a, p. 14), that "as long as laws for hunting and fishing are met, no contravention on of Art. 222 of the Penal Code occurs". It means that Article 222 of the Penal Code applies only in case of infringements of laws relating to hunting or fishing (WAP, 2014a, p. 14).

4.4.1 Which species of wild animals are protected by law

Some evidence of the value of wild animals to the country of Niger might be demonstrated by Article 7 of the Law No. 98-07 (1998). This law "recognises that the preservation of wild animal species contributes to sustainable development" (WAP, 2014c, p. 8). Article 21 ('Law Number 98-07 (Niger)', 1998). states that wild animal species present in Niger are divided into three groups corresponding to three protection schemes: a) fully protected animal species; b) partially protected c) animal species subject to regulation within the competence of Niger. The protection applies to species of listed mammal, reptiles and birds.

The Indian Wildlife Protection Act (1972) grants some protection to amphibians, birds, mammals, and reptiles, and their young (respectively their eggs) listed in Schedules I–V positioned in the appendix to this Act. List of species in Schedule I (e.g. tiger, elephant, cheetah, caracal, peafowl) is meant to be the most protected by the government and Schedule V as not protected at all (Common crow, Fruit bats, mice, rats). "Section 9 provides that no person can hunt specified endangered wild animals, with exceptions that hunting can take place under permit if an animal is considered dangerous to human life or property (section 11) or for purposes of education, scientific research or scientific management (including population management), collection of specimens for zoos and similar, and collection of snake venom for the manufacture of drugs (section 12)" (WAP, 2014b, p. 13). Also, it appears that non-listed wild animals with those listed on Schedule V can be hunted without restriction.

Alike Indian Schedule I, containing the list of protected species, which could be hunt only under particular conditions, for such a direct endangering of human life, Russian wildlife

legislation lists protected endangered animals in the collection called Red Book (WAP, 2014d). By Article 4 of Federal Law of the Russian Federation on Wildlife (1995, p. 2) rare and endangered species of animals and also those on mentioned Red Book list is considered to be objects of wildlife pertaining to the federal property.

Endangered species in Austria are protected within the competence of the Federal Provinces. Thence, there exist nine different Nature Conservation Laws for mammals, fish, and birds in Austria. "[T]he respective fisheries and hunting laws of the Federal Provinces have to be taken into consideration", says Austrian Species Protection Information System (2018).

It is also appropriate to mention, that all appointed countries subject to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) in terms of export and import of live animals and trophies ('CITES: List of Contracting Parties', n.d.).

4.4.2 Hunting restrictions

The motivation to hunt wildlife in the 21st century may vary. Wild animals might be hunted for food, trophy, sports, environmental reasons (such as reduction of pests), for trade or other reason. World Animal Protection project (n.d.) helped to compose the legislative specifics in the hunting of countries Niger, India, Russian Federation and Austria (and others) in order to expound how this activity is restricted in a national level of each of these states.

Law number 98-07 in Niger (1998) forbids the hunting of wild animals in national parks using motorised vehicles. (WAP, 2014c, p. 9). Article 3 of this law prohibits hunting without a licence, while Article 6 states that hunting licences can be issued "for scientific purposes (specified number and species of animals), for trade in compliance with international agreements, for subsistence and ceremonial purposes on the licence holder's own land, for sport (recreation, trophies or meat) and for safari viewing" (WAP, 2014c, p. 9). Article 8 prohibits hunting using poison, using explosives and bans hunting activity at night, granting some welfare elements to wild animals (WAP, 2014c, p. 9).

Section 9 of The Indian Wildlife Protection Act (1972) prohibits hunting any wild animal specified in Schedules I, II, III and IV. An exception is provided in section 10 permitting to kill a wild animal in self-defence, and section 11 grants a permit to hunt for a particular purpose, mainly educational reasons (e.g. for museums), scientific research or for scientific management (i.e. translocation of wild animals between habitats and population management, both with an avoiding killing of the animal). Scientific management allows sack and loop as capture methods, use of tranquiliser guns or other methods rendering animal insensible to pain before capture (WAP, 2014b, p. 14). Section 39 of the Act declares wild animal as Government property (as in case of the Russian Federation). However, wild animals specified in Schedule V are considered as vermin by the Indian government, and they can be hunt without restriction. Section 62. of the Act states that Government has the right to declare any animal other than those specified in Schedule I and Part II of Schedule II to be vermin for any area and such period.

The Federal Law of the Russian Federation on Wildlife (1995) "is complemented by a significant number of regulations forming secondary legislation on biodiversity, conservation,

fisheries and other related matters" (WAP, 2014d, p. 8). However, no information related to hunting restrictions was found in this law (1995), which is moreover accessible only in the Russian language. For this reason, legislative data were taken over from server Power in Hunt (Power in Hunt, n.d.). On the server's website, there is a list of forbidden methods and weapons to a hunt - such as the use of pneumatic weapons, bows, crossbows…, use of chemical preparations and explosives, the prohibition of hunting from motorised vehicles, as well as forbidden traps (Power in Hunt, n.d.). Hunting with dogs is permitted in Russia. For hunting for wild ungulates, brown bear and fur animals hunting license is required. (Power in Hunt, n.d.). Wolves, jackals, grey crows and to a certain extent stray mongrel dogs and cats are declared as pests in Russia. "[A]n amateur hunter has the right to shoot these animals for any legal presence with a weapon in the hunting grounds or use traps against them" (Power in Hunt, n.d., sec. Regulation of the number of animals that harm the hunting industry).

Article 5(1) of the Austrian Animal Welfare Act (2004) prohibits the infliction of unjustified pain, suffering or injury to an animal, or expose it to extreme anxiety. "This applies to all animals (Article 3(1)), but there is an exemption for hunting and fishing (Article 3(4))" (WAP, 2014a, p. 3). Policy relating to wild animals is regulated at the state level in each of the nine states. In state Burgenland for example, the Hunting Act ('Burgenland: Hunting Law (Jagdgesetz)', 2004) declares, that all hunters must have a valid hunting license. Article 11 of the Act grants authorization only to game reserves, where animal welfare and veterinary supervision requirements are met and "Article 67(11) stipulates that a hunting card will not be granted where a person has been convicted of cruelty to animals under the Penal Code or has committed a serious or repeated hunting offence" (WAP, 2014a, p. 14). Article 98 of the Hunting Act (2004) permits hunting with dogs (as the Russian legislation does). In Article 99 use of poison towards wild animals is prohibited and traps which do not ensure intact live capture must not be used (WAP, 2014a, p. 14).

4.4.3 The enforcement mechanism in case of wild animal law contravention

In case of wild law violation in Niger, Article 31 of Law number 98-07 specifies penalties for breaking the provisions of the Act (WAP, 2014c, p. 9), range of penalties are outlined in Articles 23 to 45. "Hunting is regulated, though it appears that there is wide scope for obtaining hunting licences, and the possibility exists for inhumane killing of wild animals" (WAP, 2014c, p. 9).

In India, by killing a wild animal, an offender might violate two legal Acts. First one is the Prevention of Cruelty to Animals Act (1960), where a contravention of section 11 (a) to (o) is subjected to fines of up to fifty rupees (higher fines with possible imprisonment for repeat offences) (WAP, 2014b, p. 15). The second violation may fall under the Indian Wildlife Protection Act (1972), which is punishable with fines and/or imprisonment. The sentence may vary depending on the classification of the wild animal under the Act (due to Schedules I–IV) and also whether the offender has been convicted more than once for the crime (WAP, 2014b, p. 15).

A person, who has violated the rules of hunting in Russia (e.g. hunting without a valid license, hunting in reserves or hurting animals on Red Book list) is brought to administrative law or criminal law (Power in Hunt, n.d.). Moreover, in case of the causing damage to the state fund by illegal prey of wild animals, the offender also subjects to civil liability. Public measures and disciplinary sanctions can also be applied to this person (Power in Hunt, n.d.). If Article 258 of the Russian Penal Code (1996) is related to wild animals, which is not explicitly declared, then as the way of punishment the law introduces fines, compulsory works, or arrest for a term of up to six months. However, WAP (2014d, p. 9) implies, that criminal persecution is quite insufficient at enforcement of provisions of Russian wildlife law.

As was mentioned above, policy relating to wild animals in the Republic of Austria is regulated at the state level in each of nine states. For example Articles 159 to 180 of the Burgenland Hunting Act ('Burgenland: Hunting Law (Jagdgesetz)', 2004) contains provisions for disciplinary action including fines (WAP, 2014a, p. 15). An anti-cruelty provision in Article 222 of the Austrian Penal Code (1975) shall punish the offender with imprisonment of up to one year or a fine. "As long as provincial laws on hunting and fishing are met, there is no contravention of Article 222 of the Penal Code. In case of infringements of laws relating to hunting or fishing, Article 222 of the Penal Code applies" (WAP, 2014a, p. 3).

For a summary, in the case of hunting each of these countries recognise some degree of protection of the welfare of wild animals, but each wildlife legislative is unique and comparing them with each other is not a trivial task. From the perspective of wild animal welfare in hunting, furthest in legislation might be the Republic of India, that bans animal hunting from 1972 in Wildlife Protection Act. In this Act, wildlife hunting is officially prohibited (except for animals listed in Schedules V and those not listed on any Schedule). Still, hunting allowances can be granted in specific cases. Austria seems to have a more straightforward approach to wild animal welfare than Russia and Niger. For example, provincial Hunting Act ('Burgenland: Hunting Law (Jagdgesetz)', 2004) suggests that a hunting card will not be granted where a person has been convicted of cruelty to animals under the Penal Code. Both Russia and Niger have some restrictions such as prohibition to hunting without a license, limitations in the way of hunting or weapon use, but it seems that in both cases there might be quite complicated to oversee the law from state authorities. We will focus on this issue in the next section of this thesis.

4.5 Government accountability for wild animal welfare

While in previous sections 4.2 – 4.4 of the thesis, legislation of each country was expounded concerning wild animal welfare, this section is dedicated to the accountabilities of governments of countries Niger, India, the Russian Federation and Austria. The aim of this section is the brief description of ministries and state organs, that are responsible for the issue of wild-animal welfare in each of the four selected countries. For international comparison, data from The World Bank ('DataBank | Worldwide Governance Indicators', 2017) were used - more specifically indicators named as Rules of Law, Government Effectiveness and Control of Corruption.

Table 5: Comparison of selected governance indicators, 2017

2017	Niger	India	Russian Federation	Austria
Rule of Law[1]: Estimate	-0.7	0.0	-0.8	1.8
Rule of Law: Percentile Rank	27.9	52.9	22.1	96.2
Government Effectiveness[2]: Estimate	-0.7	0.1	-0.1	1.5
Government Effectiveness: Percentile Rank	24.0	56.7	50.5	91.8
Control of Corruption[3]: Estimate	-0.6	-0.2	-0.9	1.5
Control of Corruption: Percentile Rank	28.8	48.6	17.3	90.9

Source: ('DataBank | Worldwide Governance Indicators', 2017)

[1] Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. ('DataBank | Worldwide Governance Indicators', 2017)

[2] Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. ('DataBank | Worldwide Governance Indicators', 2017)

[3] Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. ('DataBank | Worldwide Governance Indicators', 2017)

In the government of Niger, animal protection is not regarded as a distinct issue and is dealt with as part of a much broader package of issues under the Rural Code (WAP, 2014c, p. 10). In order to monitor and oversee the implementation of government policy, National Committee on the Rural Code was established – organisational system and the functions of the Committee is described in Decree 97-008/PRN/MAG/EL (1997 as cited in World Animal Protection, 2014c, p. 10). "However, it seems that little attention is awarded to developing policy and legislation to improve animal welfare in the country" (WAP, 2014c, p. 10). Besides National Committee on the Rural Code, other wildlife relevant government departments in Niger are the Fauna Management Service, the Department of Environment, the Department of Water and Sanitation, the Ministry of Agriculture and the Ministry of Fishing (WAP, 2014c, p. 10).

In two of three governance indicators, Niger reached better results than the Russian Federation (-0.7 vs -0.8 in Rule of Law) and (-0.6 vs -0.9 in Control of Corruption) ('DataBank | Worldwide Governance Indicators', 2017), despite the facts that Niger is one of the least developed countries in the world (905$ GDP per capita, PPP (constant 2011 international $)) ('DataBank | World Development Indicators', 2014)) and that Niger is a country with very high extreme poverty 83.3% Poverty headcount ratio at $3.20 a day (2011 PPP) ('DataBank | Poverty and Equity', 2011).

Unlike in Niger, animal welfare is an independent issue in India, recognised by legislation as such for government management and regulation, which allows animal welfare issues to be discussed at Ministerial level (WAP, 2014b, p. 16). Wild animal welfare issues, addressed in the provisions of the Prevention of Cruelty to Animals Act (1960), are promoted by the Animal Welfare Board Of India. The Board was established in order to promote animal welfare in the country and to protect animals from being subjected to unnecessary pain or suffering (Prevention Of Cruelty To Animals Act, 1960, Section 4). "The Ministry of Environment and Forests also has a scheme to assist the Animal Welfare Board with its work" (WAP, 2014b, p. 17). Above that, Animal Welfare Board is made up of 24 representatives from several areas of the Government of India, while related to the welfare of wild animals concern is, for example, the Inspector General of Forests and the Indian Board for Wild Life (WAP, 2014b, p. 16).

On top of the strong support base for wild animal welfare issues by the Animal Welfare Board, the government of India does evince standard conditions in the selected World Banks's governance indicators ('DataBank | Worldwide Governance Indicators', 2017). With percentile rank of each of three indicators around 50 (Rule of Law: 52.9; Government Effectiveness: 56.7; Control of Corruption: 48.6 ('DataBank | Worldwide Governance Indicators', 2017)), it can be inferred that India is a country with average government conditions, while Indian governance indicators are neither significantly bad, and nor significantly good compared worldwide. As might be expected, India reached a better result in all three governance indicators compared to economically less developed Niger (0.0 vs -0.7 in Rule of Law; 0.1 vs -0.7 in Government Effectiveness; -0.2 vs -0.6 Control of Corruption ('DataBank | Worldwide Governance

Indicators', 2017)). However, perhaps as less expected, India surpasses more economically developed Russia in all three governance indicators (0.0 vs -0.8 in Rule of Law; 0.1 vs -0.1 in Government Effectiveness; -0.2 vs -0.9 in Control of Corruption) ('DataBank | Worldwide Governance Indicators', 2017)).

For Russian animal protection or animal welfare development, World Animal Protection (2014d, p. 9) found "no evidence of responsibility being allocated to an individual body of the government". Recently issued Federal law N 498-FZ (2018) on responsible treatment on animals might have brought those evidence, yet the law only promotes improvement in the welfare of animals keeping in human care, but wild animals have acquired no consideration of welfare improvement in protection from the Russian government. "Environmental and conservation measures in the country are underpinned by a view of the commodification of animals, which does not create a framework in which debates promoting animal protection and animal welfare can take place" (WAP, 2014d, p. 10).

Moreover, in all three governance indicators ('DataBank | Worldwide Governance Indicators', 2017) Russia reaches negative values. Compared to other selected countries, the Russian government exhibits the lowest value (-0.8) of Rule of Law indicator, which reflexes perception of the police, the courts, or the likelihood of crime by the citizens. Indicator Control of Corruption (-0.9) is worse than in the case of Niger (-0.6), a similar level of corruption worldwide can be found in Azerbaijan (-0.9), Nicaragua (-0.9) and Papua New Guinea (-0.9) ('DataBank | Worldwide Governance Indicators', 2017).

Compared to Niger, India and Russia, Austrian animal welfare system is the most comprehensive. The welfare issues fall under the Federal Ministry of Health (FMH) (World Animal Protection, 2014a, p. 15). Under the Animal Welfare Act (2004) three animal welfare bodies were created. The first one is called the Animal Welfare Commission, and its task is to advise the Federal Minister of Health on issues of animal protection and to make recommendations to the FMH regarding strategies for the further development of animal protection (Federal Law Gazzete, 2004, para. 41a. (6)). "The Commission consists of one representative from each party in the Nationalrat (National Council: one of the two houses of the Austrian parliament) and two experts each from the Federal Ministries of Health and of Agriculture, Forestry, the Environment and Water Management" (WAP, 2014a, p. 16).

The second body is The Animal Protection Council with the main purpose for advising the Commission and the FMH regarding animal protection issues and preparing and submitting opinions on draft regulations to the Animal Welfare Act (('Federal Act on the Protection of Animals', 2004, para. 42. (7)). "The members of the Council include heads of specialist enforcement bodies at state level, the Chair of the Animal Welfare Council, a representative of the state Animal Welfare Ombudsmen, and representatives of the Federal Ministries of Health and of Agriculture, Forestry, the Environment and Water Management" (WAP, 2014a, p. 16).

The last animal welfare body in government is the Executive Advisory Council. Its duties mainly consist of preparing guidelines required for the uniform execution of this Federal Act in the provinces. (Federal Law Gazzete, 2004, para. 42a. (7)).

Not only Austria has a very comprehensive animal welfare system; moreover, Austria evinces very high percentile rank, above 90.0, in all three selected indicators (Rule of Law: 96.2; Government Effectiveness: 91.8; Control of Corruption: 90.9) ('DataBank | Worldwide Governance Indicators', 2017). These results are very high not only compared to three countries selected but also worldwide, which places the Austrian government among one of the best--evaluated governments by its citizens in the world.

To summarise the chapter 4 of this thesis, it can be said that the global approach of individual governments to wild animal welfare may not be explained by the plain compare of a parameter of GDP per capita, PPP or the country's poverty headcount ratio. For example, as showed in the case of Russia, the concern of wild animal welfare in the country is deficient (in some cases is the welfare of wild animals protected by legislation less than in Niger). Also, in governance indicators, namely Rule of Law Government Effectiveness, Control of Corruption ('DataBank | Worldwide Governance Indicators', 2017) Russia evince negative values and in some cases worse estimation and a percentile rank of these indicators compared to countries with higher poverty headcount ratio ('DataBank | Poverty and Equity', 2011) and lower GDP per capita ('DataBank | World Development Indicators', 2014). These conclusions may suggest that poverty reduction at the state level does not necessarily improve the welfare of wild animals due to the state's faint legislation towards protecting wild animals and considering poor governmental effectivity.

Conclusion

The thesis aimed to find the answer to the question of whether there exist pieces of evidence of the reduction of global poverty affecting wild animal welfare. The results suggest, that this evidence might exist, but is very limited. From the macro-perspective, the environmental Kuznets curve failed to grant steady results when applied to several previous studies independently (Stern, 2004). The second weak point of the EKC linked to the welfare of wild animals is that, though, it examines a relationship of per capita income and environmental degradation. However, under the term "environmental degradation" it is possible to imagine the whole bunch of incidents, which are less (such as CO_2 emission) or more (e.g. habitat loss) related to wild animal welfare. Not even Animal Kuznets Curve we find to be sufficient for the wild animal welfare, as it does not take wild animals into account. From this perspective, we propose the need for a Wild animal Kuznets curve, where the parameter of "environmental degradation" would be substituted by "wild animal welfare".

As it was mentioned, we found very limited evidence of the environmental Kuznets Curve that might apply to wild animal welfare. Then, is the effect rather positive or negative? According to the EKC model, environmental degradation first evinces to exacerbate up to a certain threshold of income per capita, where the trend of degradation should reverse to lesser environmental impacts. However, it turned out, that other variables beside "income per capita" are crucial for the wild animal welfare issues.

The qualitative approach rested in analysing four countries (the Republic of Niger, the Republic of India, the Russian Federation, the Republic of Austria) by their quality of institutions, government effectiveness and the rule of law. These indicators suggested that higher GDP per capita, PPP and the lower poverty headcount ratio does not guarantee better legislative protection of wild animal welfare. Since this final part of the thesis comprises of comparison of the wild animal welfare of four countries only, we are aware that the interpretation cannot be generalised. Other parameters such as climate, the demographic composition of the population, level of education, culture and religion may also play a role in wild animal welfare issues. Above that, each of these parameters is difficult to measure. Ideally, this thesis can stimulate further studies to compare multiple countries or ideally, worldwide comparison to grant more representative results.

A contribution of this thesis may consist of two foundations: first, we figured out that to comprehend the relationship of global poverty and animal welfare, the Environmental Kuznets Curve seems insufficient, and verification of Wild animal welfare Kuznets Curve would be a reasonable basis for future research. Secondly, the researcher using the Wild animal welfare Kuznets Curve, should be careful about indicators such legislative, quality of institutions, government effectiveness and the rule of law, because these indicators might affect the wild animal welfare both in developing and the developed countries.

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