

Raising Public Awareness about Water and Water Resource Importance in Slovenia as a Social Responsibility

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Abstract

Water is a goodwill that preserves life on planet Earth. Its resources, consumption and use have always been a hot topic on the global level, since humans with their interventions in nature change natural processes and, by inappropriate and unreasonable behavior, pollute and threaten water. We also find that for the majority of the population water is self-evident, which is far from being true. The amount of water is limited; the increase in the number of inhabitants on Earth has caused an excessive increase in consumption, which is also endangering water resources. Forecasts for the future are poor, as almost a third of the population is at risk from drinking water shortages.

In this paper, we focused on resources, water management and pollution, as well as the importance of public awareness. There are still many open questions. Will we humans tackle them and resolve them and start to do the same things as we are obliged to do in the current situation, or we can expect bad prospects for the future. By the year 2030, the UN Conference requires, we should provide everyone on the planet with access to drinking water and sanitation and to ensure the sustainable management of water resources. In Slovenia, we are currently among healthier areas, but it is misleading and even damaging to rely solely on achievements and comparative advantage. Globalization has not only brought about the impact of global trends on us, but also vice versa, patterns of consumption and production of each country contribute to the situation elsewhere in the world. The new attitude and responsibility to the environment must be assumed by every individual, regardless of their location or other factors. This requires changes in personal views. People need constant and persistent information, display of new possibilities, new ways, new patterns, creating a supportive environment that offers an easier decision for appropriate solutions.

The process of change begins with the awareness of the problem and accepting responsibility for it; this can only trigger a sincere attitude that is the only one that can be successful and long-term stable. For information, we propose all the means of education - but not in the way of schooling, but through narratives and examples that open up new views. If our own decision gives a new look to young people, we direct ourselves to a different attitude, and at the same time become an example and a model.

Key words: water, survival on Earth, education, social responsibility, Slovenia



Ozaveščanje ljudi o pomembnosti vode in vodnih virov v Sloveniji kot družbena odgovornost

Povzetek

Voda je dobrina, ki ohranja življenje na planetu Zemlja. Njeni viri, poraba in uporaba so od nekdaj in še danes vroča tema na globalni ravni, saj človek s svojimi posegi v naravo spreminja naravne procese ter z neprimernim in nerazumnim ravnanjem vodo onesnažuje in jo ogroža. Ugotavljamo tudi, da je voda za večino prebivalstva nekaj samoumevnega, kar še zdaleč ne drži. Količine vode so omejene, saj se je zaradi povečanja števila prebivalcev na Zemlji poraba prekomerno povečala in so s tem so ogroženi tudi vodni viri. Napovedi za prihodnost so slabi, saj naj bi bila skoraj tretjina prebivalstva ogroženega zaradi pomanjkanja pitne vode.

V tem prispevku smo se osredotočili na vire, ravnanje z vodo in onesnaženje, pa tudi pomembnost ozaveščanja javnosti. Odprtih vprašanj pa je še veliko. Ali se jih bomo lotili in jih razrešili ter pričeli z vodo ravnati tako kot od nas zahevajo trenutne razmere ali pa lahko pričakujemo slabe obete za prihodnost.. Do leta 2030 naj bi po sklepu konference OZN vsem na planetu zagotovili dostop do pitne vode in sanitarne ureditve ter poskrbeli za trajnostno gospodarjenje z vodnimi viri. V Sloveniji smo trenutno med bolj zdravimi področji, zavajajoče in celo škodljivo pa se je opirati zgolj na dosežke in primerjalno prednost. Globalizacija ni prinesla le vpliva svetovnih trendov na nas, ampak tudi obratno, vzorci potrošnje in proizvodnje posamezne države prispevajo k stanju drugod po svetu. Novo naravnost in odgovornost do okolja mora prevzeti vsak posameznik, ne glede na svojo lokacijo ali druge dejavnike. To zahteva spremembe v osebnih pogledih. Ljudje za vzpostavitev sprememb potrebujemo neprekinjeno in vztrajno informiranje, prikaz novih možnosti, novih načinov, novih vzorov, nujno je ustvarjanje podpornega okolja, ki ponuja bolj enostavno odločitev za ustrezne rešitve.

Proces spremembe se začne z zavedanjem težave in sprejemanjem odgovornosti zanjo, šele ta pa lahko sproži iskreno naravnost, ki je edina lahko uspešna in dolgoročno stabilna. Za informiranje predlagamo vsa sredstva izobraževanja – vendar ne na način šolskega učenja, temveč skozi pripovedi in primere, ki odpirajo nove poglede. Če z lastno odločitvijo ponudimo nov pogled mladim, s tem sebe usmerimo k drugačnemu ravnanju, obenem pa postanemo zgled in vzor.

Ključne besede: voda, preživetje na Zemlji, vzgoja, družbena odgovornost, Slovenija

Importance of Water

People and Water

Water is an integral part of the Earth. All living beings depend on it and it affects geological and climate processes. Therefore, water resource protection measures are part of general ecology forming the guideline for our behaviour on Earth.



Water makes up for the majority part of the human body, in approximately the same proportion as the Earth's surface. Our tissue and membranes, the brain and the heart, sweat and tears; this is all composed under the same recipe of life which effectively uses the substances that comprise the Earth's surface. The human body is made up of 23% of carbon, 2.6% of nitrogen, 1.4% of calcium, 1.1% of phosphorous and a negligible share of about three dozens of other elements. Oxygen accounts for the majority part of the human body (61%), together with hydrogen (10%) forming a unique molecular combination, that is, water, which makes up for 71% of the human body.

So, when environmentalists claim that we are a part of the Earth, they are actually right. Our blood contains approximately the same percentage of salt as oceans where the first forms of life were developed. (Summarised from Gore, 1994, 82)

In the human body, cells, extracellular space and blood plasma contain water, the body's transport medium for oxygen, vitamins, minerals and glucose. Water helps transport toxins to the kidneys and later excrete them. It also works as an ointment around joints and, to a certain degree, balances body temperature. Water affects our productivity and concentration and is involved in the biochemical decomposition of the food we eat: waste substance elimination.

Furthermore, water is a solvent which dissolves more substances, be they solid, liquid or gas, than any other solvent. Pure water does not exist in nature. It works as a solvent in our body because all metabolic biochemical reactions take place in aqueous solutions. The water solubility of substances primarily depends on substance type and temperature. Pursuant to water being a polar solvent, polar and ionic substances, such as table salt, are easily dissolved in it, whilst apolar substances, such as fats and oils, are less soluble in it in comparison. (Summarised from Primavoda, 2015)

The Water Cycle

The water cycle describes how water moves from the earth's surface to the air and back to the earth in different forms, or physical states. Water constantly cycles in nature, thereby preserving life on earth. Heat warms surface waters, separating water molecules from each other, changing them into an invisible gas called water vapour, or steam. The hotter it is, the more water evaporates, the majority from seas and oceans. When water vapour rises it forms clouds, when it has cooled enough, it becomes condensation. Water thus falls back to earth in the form of precipitation, that is, rain, snow, or hail. If the temperature drops to 0 degrees Celsius, water's freezing point, water drops turn into crystals, or snowflakes. The water that falls on meadows, fields and forests is absorbed by plants, the remainder disappearing into the earth where it is collected in impermeable layers deep under the surface, that is groundwater used for drinking. Water on the earth's surface in the form of streams and rivers flows back into the seas and oceans, the cycle beginning anew.

Water and Water Resources

Much has already been said and written about water and water resources, yet we still daily read about events requiring us to focus our attention on water management and use.



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Climate change, which is becoming more and more obvious, together with various environmental incidents, is negatively affecting hydrological conditions. Moreover, we cannot neglect the fact that human intervention, such as degradation of vegetation, soil, rivers, lakes and seas, also pollutes waters and increases the effects of flood and drought.

Pursuant to its application versatile and accessibility, water is an indispensable resource for daily tasks at home as well as in agriculture and industry. Households pollute water the most with their detergents and faeces. The water used by households for washing dissolves detergents that include many substances, including polyphosphates and perborates, which often pollute surface waters. The Water Resource Pollution Level is a key indicator of a region's industrial and economic development, and rate of technological progress. It is widely accepted that the higher the level of economic development, the higher the level of pollution there is.

Water is a renewable resource, but due to rapid increase population over the last century, we have been using it faster than it can be renewed. This fact should force us to follow the sustainable development principles that the governments of the world have already committed themselves to. Technological progress has further accelerated resource utilisation and science points out that we must balance consumption with natural renewability, thereby protecting the environment. This is all connected to quality of life, and the world must come to common agreement in relation to this. Owing to increasingly more-obvious environmental fragility, quality of life should no longer be reckless based on consumption since we, as a society, must be responsible and live rationally, thereby enabling our descendants to live comfortably on this planet.

Groundwater is our most important drinking water resource and it is also used for agricultural irrigation. The first problem is that groundwater availability is limited in terms of renewability, and this depends on the quantity of precipitation, evaporation and running water infiltration. Globally, groundwater is primarily endangered by excessive pumping, resulting in wetland shrinking, water source drying and running water resource reduction. The second major problem is groundwater pollution. The effects of harmful substance entry are often long-lasting because groundwater moves slowly and natural cleaning processes last several decades. Infiltration from surfaces in the area of groundwater represents a major problem further to nitrate, pesticide and other anthropogenic polluter leaching. As a result of yearly increases in pollution levels, drinking water quality has been decreasing, resulting in countries' needing to invest more and more in the construction of wastewater purification plants and other groundwater pollution mitigation measures.

It is important to determine water quality in our environments. In order to do so, we need to establish limit values, values determined by experts, and posit them in water quality directives for individual areas and countries. Water monitoring is performed by hydrologists, biologists and chemists. Using water samples from measuring spots, experts perform basic physical and chemical analyses, analyses of heavy metals in water, analyses of sediments and suspended parts, analyses of organic compounds, bacteriological analyses, and analyses of biological communities. Taking into consideration hydrometeorological conditions during individual sampling, experts use these analyses to make a common water quality assessment for specific measuring spots. What should drinking water be like? The water that we drink



daily and use for other tasks does not contain microorganisms, parasites and their development types, or substances that alone or in combination with other substances which represent health risk.

Globally, water is pumped from underground resources much faster than it can be renewed. Slovenia is a water-rich country, therefore we do not have major problems in terms of drinking water supply, except locally and then only occasionally. But ecologists warn that there is cause for concern.

“Slovenia faces water stress, typical of which is the simultaneous occurrence of flood, drought and groundwater level decrease. Flood and drought areas are in unusual close proximity and have groundwater supply reduction in common. Owing to negative water balance, the water safety of the country, which is an important part of the country’s national safety, is at risk. Water abundance is flowing away from us, and we have no substitute for water; there is no industrial substitute for the most precious natural resource.” (Komat, 2017, 152)

Water Management: Water Use and Main Water Polluters

Water Polluters

The three main pollution sources are industry, agriculture and households. Industry uses twenty-five percent of all pumped water and industrial processes pollute it with heavy metals and other toxic substances: mining and construction with sediment and acids; food production with organic substances. The energy industry uses water to cool its nuclear and non-nuclear power plants, and its return to the water cycle increases water temperature. Household water consumption has also increased the level of organic and inorganic pollution levels. (Summarised from Primavoda, 2015).

Agriculture is the major water consumer, using two thirds of all pumped water, and pollutes with mineral fertilisers, pesticides and natural manure residuals; water is polluted with the artificial fertilizers nitrogen, phosphorous and potassium compounds. All three of these elements are used to speed up plant growth. Ammonium compounds and nitrates dissolve well water, which is why in cases of outflow of large quantities of artificial fertilisers into water, plants develop on the surface of streams, especially algae, which decompose into bacteria that use all of the dissolved oxygen and, as result, all of the other organisms in water die. (Summarised from Smrdu et al., 2014)

An even greater problem is represented by various pesticides which may enter groundwater, Slovenia’s main drinking water resource. An example of such polluting occurred in 1989 on the Dravsko Polje, with pesticide-herbicide content exceeding permitted values by 20 to 40-times, requiring the city of Ptuj and its environs to be supplied with drinking water from water tanks.

The excessive use of water for cattle and other breeding animals, the major environment polluter in recent years, is alarming. Dr Rajendra Pachauri, the UN’s head climate expert, who last year received the Nobel Prize with his co-workers and Al Gore for their environmental engagement, pointed out that cattle breeding causes 18 percent of all GHG



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emissions, pollutes water and soil, damages our health, and causes animal suffering in industrial farms. He proposed a gradual reduction in breeding and meat consumption.

Water requires good, prudent management. We must not forget that besides the processing industry, the rest of industry is also a great consumer, using it for cooling and other technological processes, such as washing, diluting and dissolving. Being an excellent solvent, water can be loaded with various salts. Heavy metals are especially problematic and very toxic in high concentrations; through water, these can enter the human body, causing mutation.

Water Consumers

In the last century, we have witnessed two fatal changes, changes defining our relationship with the Earth: a sudden and immense increase in population, increasing by one China every ten years, and a sudden increase in scientific and technological development, which has enabled an unimaginable increase of our ability to change the world, by burning, cutting, digging, moving and changing the substances that are part of the Earth.
(Summarised from Gore, 1994, 14).

Increasing pollution and intensive water use give rise to the need for responsible management and careful planning with regard to water use in the future. We must not forget that we as individuals also have a great responsibility to the environment. Data evidencing wasteful household behaviour is alarming and younger generations have not been made sufficiently aware of the importance of water and its management: we still take it for granted. Households use between 10 and 40% of all pumped water. On average, 11 to 20 litres of water per minute flows from an open tap. If a family of three or four leaves water running whilst washing dishes by hand, it uses 30 to 40 litres of water, dishwashers only using between 18 to 27 litres for the same quantity. Every time we flush a toilet, approximately 9 litres of pure water immediately turns into dirty water. By leaving water on the whole time we shower, we use up to 140 litres of water in five minutes; by bathing in the tub, we use up to 250 litres. If we leave the water running whilst brushing our teeth, we use between 20 and 40 litres of water more than if we close taps. Weak valves on toilet tanks increase daily water consumption by more than 10 litres. Watering the garden increases water consumption by 250 litres a day, the same as washing cars.

In order to improve the current situation, active education and awareness raising about the responsible use of water resources is necessary. This means we need to change daily attitude in respect to household chores. Unfortunately, we are still insufficiently aware of the importance of water resource preservation, therefore we do not use water wisely enough. Drinking water supply for future generations primarily depends on how we manage it today.

Water management should not neglect virtual water, that is water used during the production of all types of products; in households, water is not only used directly for dishwashing, laundry, cleaning and personal hygiene, but also indirectly when buying such products. An individual's water footprint, therefore, is the total quantity of indirectly and directly used water, reaching 5,000 litres a day per inhabitant in the developed world. Virtual water is made up of three components: the green, blue and brown. Green is the quantity of rainwater



that evaporates during production processes: most of this is used in agriculture. Blue is the quantity of water used during production processes returned to pumping spots: this refers primarily to industry. Brown is the quantity of water that is polluted during production.” (Primavoda, 2015).

Water Purification

Wastewater purification is a pollution mitigation measure involving household and industrial wastewater processing performed in purification plants by means of various procedures through which water is cleaned in three ways: primary/mechanical purification, secondary/biological purification, and tertiary purification. The technology used imitates natural water purification processes. Wastewater flows into a purification plant where at the first stage, physical processes reduce solid waste content. Biochemical processing is performed at the second stage, often through bacteriological decomposition and chlorination, or disinfection. In Slovenia, chlorination and disinfection are rarely performed at the secondary stage, UV disinfection is applied instead of chlorine. Tertiary purification entails procedures for eliminating nitrates and phosphates to prevent nutrient accumulation in stacks and reduce eutrophication.

Water Pollution in Slovenia

Auditors have presented the impact of pollution on drinking water quality in the Drava Basin and evidenced the importance of groundwater drinking resources, stating it is extremely difficult to eliminate pollution, even over generations. They have called upon the Court of Auditors to demand the Ministry ensure the prevention of deterioration of the deep aquifer, Drava basin, and to research why atrazine is present in groundwater when its use has been prohibited since 2002.

The Court of Auditors checked the data on the implementation of several groups of measures aimed at water pollution mitigation, namely in the field of determining water protection environments, reduction of nitrates from agricultural resources, urban wastewater cleaning, reduction of hydromorphological water pollution and water pollution inspection controls (Summarised from Tax-Fin-Lex, 2019).

Pursuant to Court of Auditors’ findings, the Ministry only partly monitored and reported on measure implementation: the Court only receiving partially completed reports from the relevant ministries and other bodies responsible for implementation. Based on available data, the Court of Auditors assessed that measure implementation was insufficient, it is, therefore, most likely that measures will not be implemented by the end of the six-year planning period, as anticipated, in the field of water management.

The Court of Auditors recommends the Ministry include potential regional water shortages, ensure pollution analyses comparability between periods, and propose additional measures of agricultural resourced nitrate entry into waters in water management plan preparation.

According to the Court of Auditors, the goal of ensuring good water condition of in Slovenia by 2021 will not be achieved; even though measures were determined, implementation reporting has only been partial. The available data shows that the measure implementation is not as good as planned. The Ministry of the Environment and Spatial Planning explained to



the STA that they had received the report and would like to analyse it in detail before providing a proper response. After the performed audit, the Court of Auditors decided to conduct a new audit in relation to nitrate reduction success achieved in relation to agricultural water by the Ministry of Agriculture, Forestry and Food and at the Ministry of the Environment and Spatial Planning. (Summarised from Tax-Fin-Lex, 2019)

Water and Ecosystem Management

In addition to light, air, heat and mineral substances, water is an inanimate environmental factor. Together with animate factors and energy, they form the ecosystem. In relation to the environment and each other, organisms in nature are in biological balance. The most important external factor affecting the ecosystem is the climate. Namely, the amount of water available in the ecosystem depends on the amount of precipitation and temperature. The ecosystem includes many different living environments, including lakes, ponds, oceans, deserts and forests. Water resource protection is becoming a priority of countries worldwide, which is why countries have been adopting various measures and directives in this field.

The only living beings present in virtually all ecosystems are people, which is why we can claim that the Earth is our largest ecosystem. An ecosystem starts with producers, continues with users and ends with decomposers, which change dead plants, animals and their excrements into carbon dioxide, water and minerals. The entire cycle thus stops and restarts.

Water and water resource management is thus definitely one of the challenges we are facing in the 21st century, and this is also supposed to be solved by the so-called green infrastructure, which represents re-planting trees, connecting rivers with flooding fields, restoring wetlands, and many other eco-friendly solutions. Of great importance is the fact that such intervention would help individual countries achieve one of sustainable development's goals more easily: we know that not all people in the world have access to drinking water, which is why water is not to be taken for granted. In 2000, scientists forecast that by 2025, one third of the world's population would face drinking water shortage, but indicators show that this had already been evidenced almost 20 years before then. Around a fourth of the world population lives in conditions where it is extremely difficult to get water. Groundwater is disappearing because of climate change, excessive use, incorrect farming methods and excessive industrial consumption. A billion people have no access to drinking water because they do not have the money to use water resources (Petkovšek, 2008).

Komat (2017) points out the major culprits endangering Slovenia's water environment, and these culprits face no sanctions from the competent inspectorates. Fish farms using toxic chemicals which flow into watercourses, agrochemicals, nitrogen pollution, pesticide penetration into groundwater and watercourses thereby endanger water safety.

To focus more attention on water and water resource management in Slovenia, we can use statistics from 2016, when 162 million m³ of water were pumped from all water resources into Slovenia's public water system. Pursuant to water system network wear and tear, 45 million m³ of water were lost in the system and only 117 million m³ reached end users. The majority of the water that reached households, 78 million m³, was from the public water system. This data evidences that in 2016, Slovenian households used 38 m³ of water per



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capita on average, accounting for 104 litres of water per capita daily. The other users, kindergartens, schools, various public institutions and companies, received and used 34 million m³ of water from the public water system. The remaining 5 million m³ of water was supplied for the needs of firefighters and road cleaning. According to SURS, the water supplied to Slovenian households from the public water system in 2016 (78.4 million m³) would fill Lakes Bled just over three times.

In terms of water consumption, experts consider anthropogenic intervention in the water balance of an area over a certain time. They differentiate between pumped and consumed water. Pumped water is defined as total water quantity taken from underground and surface resources supplied to the user via the water system. Not all of this is consumed as some is wasted and some evaporates: in Slovenia, such loss amounts to approximately 40%. At pumping spots, people get water and subsequently return the majority back to rivers and lakes after use. (Summarised from, 2015)

Water supply quantities fluctuation, evidenced in aquifers and available fresh water resources every year, depends on hydrologic conditions. An interesting example is that the quantity of fresh water resources dropped by 46% in 2015 when compared to 2014 due to small river discharge. Based on this data, we can calculate that it represents 12,144m³ per capita. Looking at our reservoirs, the data shows that 725 million m³ of water was pumped in 2016. Karst sources provide drinking water supply to almost half of Slovenia's population, thereby making pollution limitation extremely important. Due to low summer discharge, Karst water has lower self-cleaning capacity.

Some of the water was intended and used in agricultural irrigation systems (3 million m³), whereas the predominant part is accounted for by industrial consumption (722 million m³). Industrial consumption is primarily accounted for by production processes, mining, processing activities, the supply of electricity, gas and steam, waste management, environment rehabilitation and water supply. Wastewater data is also interesting. This is water not used by industry, households, public institutions, agriculture or others, but water released back into the environment. Wastewater, however, does not only include the aforementioned water, but also rainwater that flows back into the environment via the sewage network or water captured and released directly into rivers, streams and soil. In 2016, 909 million m³ of wastewater was released back into the environment. 707 million m³ of water was released into surface waters from industrial activities, and 200 million m³ of water from the public sewage network. Prior to being released, 68.6% of wastewater was, on average, purified by the public sewage network. Statistical data shows that the majority of wastewater was purified and released in the Zasavje statistical region (96.5%), the minor part in the SE Slovenia statistical region (30.7%). The smallest amount of wastewater (2 million m³) was released into the soil.

2019 marks 26 years since the United Nations General Assembly's declaration of 22 March as World Water Day.

Sustainable Water Resource Management and Water Protection



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When speaking about sustainable water resource management, we usually mean long-term planning that will protect ecosystems and enable water supply for future generations. Sustainable water resource management defines use and protection, nature protection and spatial planning measures for the entire river basin. So, what is rational water use? The ecological criteria for acceptable use state that groundwater must remain suitable to drink, land fertile and fish edible. Biodiversity must be protected, long-term overuse eliminated, the entry of nutrients and other substances into water reduced and the self-cleaning capacity of water resources improved.

Environmental conferences gather country representatives and leaders who commit to and decide on the future of natural resources, including water. With such activities, they try to find solutions at the global level to the benefit of all, including future generations.

Since the first civilisations, people have inhabited river valleys and utilised rivers to irrigate farmland and for other economic activities. To date, rivers are still largely used for irrigation, and through development, field surfaces face increasing population growth. The spread of agriculture has resulted in the construction of large dams and water reservoirs. The second consequence is soil salinisation, which decreases its fertility. In the past, water flow drove mills and saws, while today, it is used in hydroelectric power plants to generate electricity. Rivers have been used for transport and fishing since prehistoric times. River transport connected interiors with coastal waters; as a result of excessive fishing, fish populations became endangered or even extinct. Standard of living improvement has brought tourism development, including rafting, canoeing, and sports fishing, activities that people enjoy in their free time in economically developed countries.

Fishing and water supply are important lake activities; at the same time, large quantities of wastewater flow into lakes. Lake water, for example, supplies New York, Tokyo, Moscow and Paris. The role of lakes in tourism has been developed globally. The energy sector throughout the world uses lake water to cool thermoelectric and nuclear power plants, and to generate electricity. Especially in the dry areas of Asia, Africa, North America and Australia, lake water is used to irrigate farmland. Unfortunately, lake water renewal is very slow; compared to total river discharge, lake water quantities are smaller, therefore lakes are among the more sensitive ecosystems accumulating polluted waters.

Our use of strong household cleaning agents leads to harmful substances being released into the ecosystem. Therefore, we should not use aggressive cleaning agents and detergents and, most of all, not use excessive amounts of detergent when doing the laundry. Nature also has useful bacteria which decompose waste, including cleaning agents, most of all disinfectants, but they non-selectively destroy everything, thereby destroying the natural balance of the ecosystem. Even urban wastewater purification plant processes cannot decompose all organic substances. (Kastner, 2019)

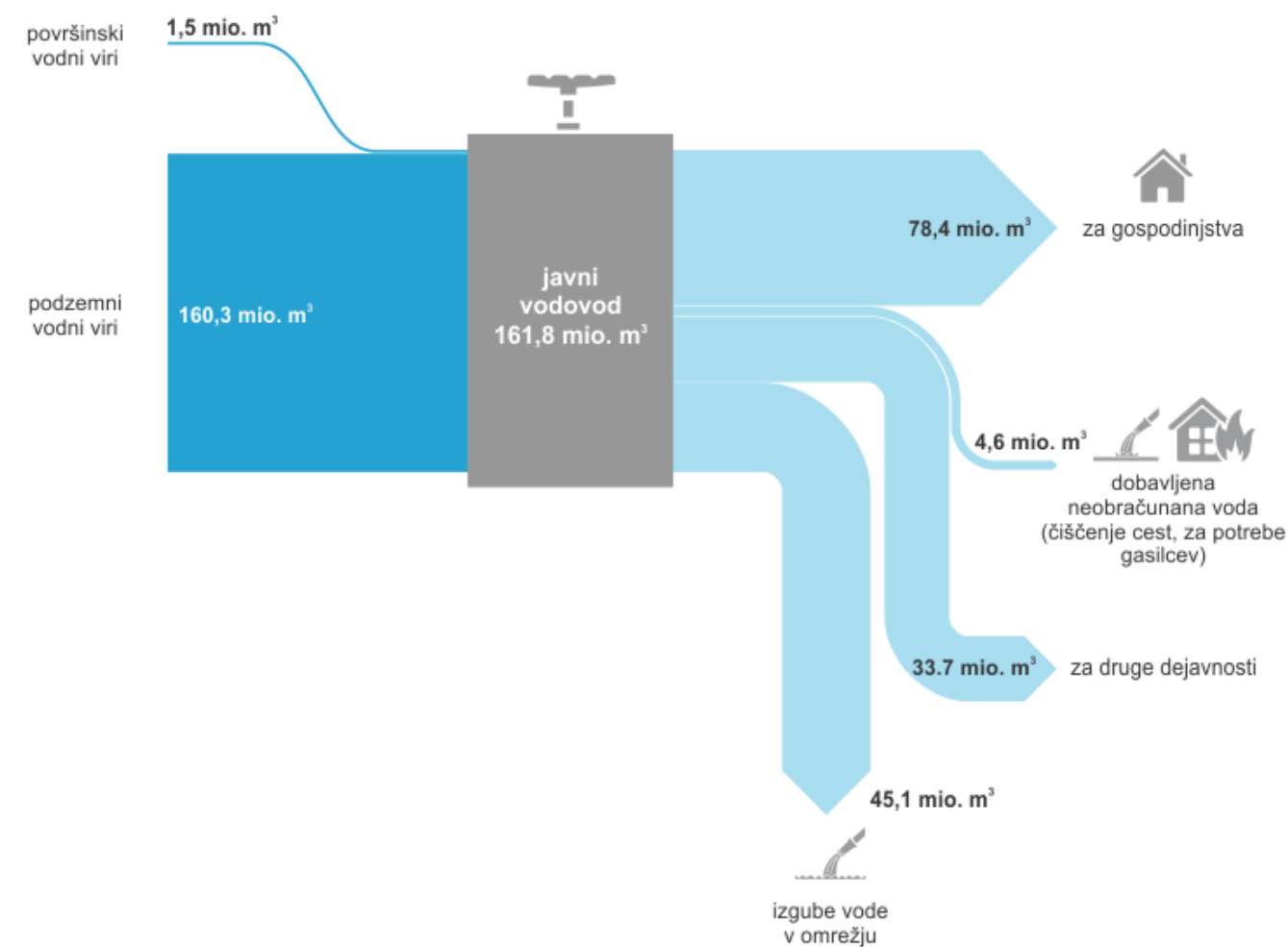
In Slovenia, Karst water is used to supply the majority of users, therefore we should be particularly concerned about the quality of such water. Often, poorer quality Karst water can be attributed to the excessive quantities of non-purified wastewater in terms of self-cleaning capacity. Due to ground permeability, pollutants penetrate water in the event of car accidents. Harmful substance leakage is especially dangerous on Karst fields, as such substances pass



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through their thin soil layers into the groundwater and aggravate water quality in the Karst area in the long run. The purest sources are: Kamniška Bistrica, Sava Dolinka and the Soča River.

Javni vodovod, načrpana in dobavljena voda, Slovenija, 2016

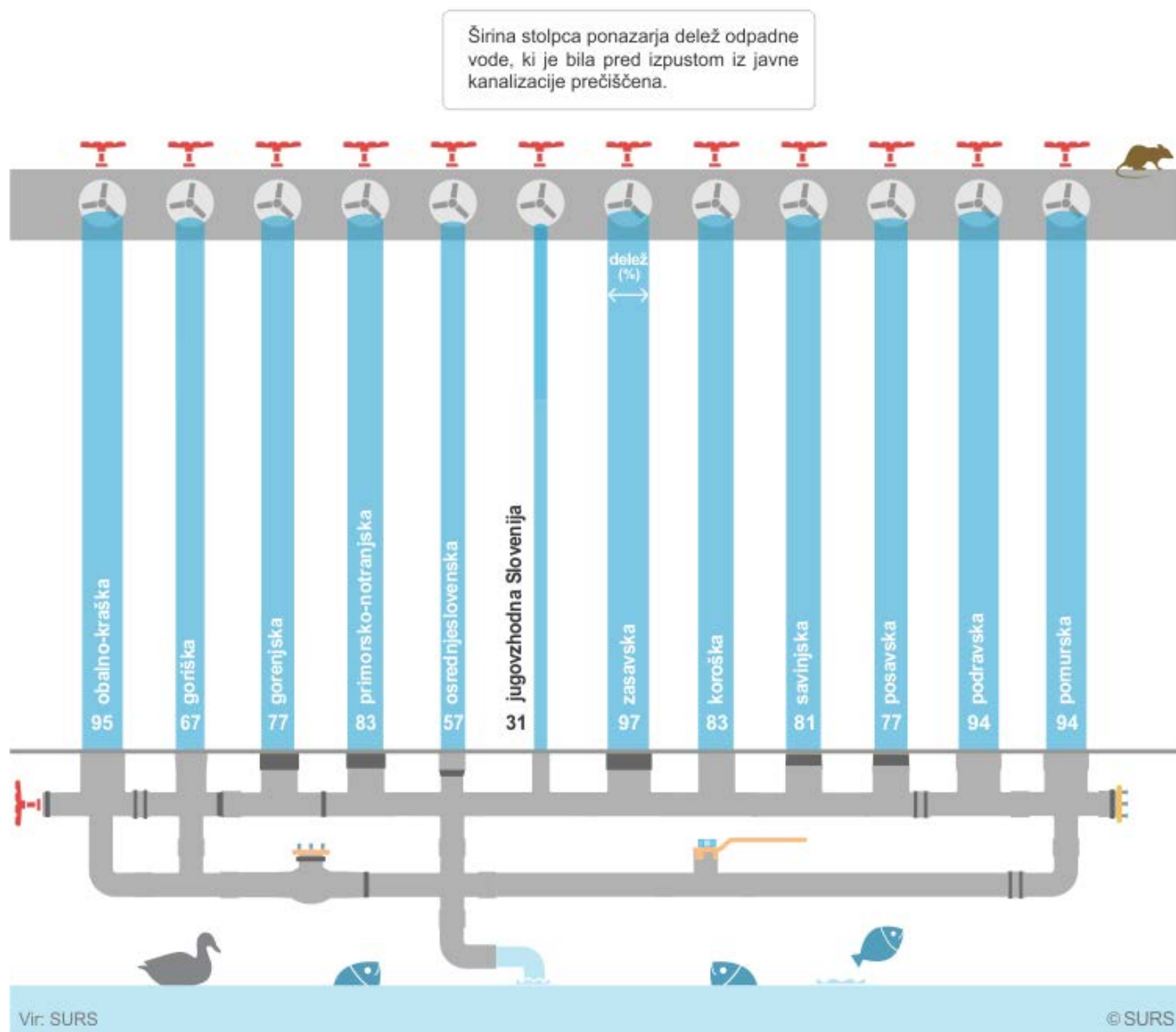


Vir: SURS

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Prečiščena odpadna voda iz javnega kanalizacijskega omrežja, statistične regije, Slovenija, 2016



Steps Towards Changing Irresponsible Water Resource Management

Global Commitment to the Earth

Our irresponsible behaviour towards our planet has become the most serious problem in terms of existence on Earth. How aware are we of this? And what are we willing to do to improve the situation.

Our planet's health depends on the complex balance between the interdependent systems. It is, therefore, not surprising that by changing the global atmosphere we also change the ocean-land water cycle methods. (Summarised from Gore, 1994, 83)

Globally, awareness of water as one of the most strategic resources is increasing. The fact that we have started running out of water and that what we have is polluted means it is important to raise awareness and ensure that all measures to reduce hazard risk are taken. (Summarised from Kajfež Bogataj, 2014, 287)

On 25 September 2015, the UN summit in New York unanimously adopted the 2030 Agenda for sustainable development (Agenda 2030), an historic agreement by the international community to eliminate poverty, reduce inequality, ensure progress and environmental protection for current and future generations.

In 1994, Al Gore (1994) said that a new plan was needed to preserve Earth, a plan all countries in the world would have to observe. The plan would require rich countries to help weaker ones, and this would demand transformations which would be even more painful for the developed than developing world because they would have to give up certain strong patterns, even though they are not directly at risk. This, naturally, faced opposition.

The 2030 Agenda for sustainable development balances the three dimensions of sustainable development, the economic, social and environmental, integrating them in 17 general and 169 concrete sustainable development goals to be implemented by 2030.

The preamble itself includes a decision: to protect our planet from degradation, including sustainable consumption, production, natural resource management and taking urgent action on climate change, so that the Earth can support the needs of present and future generations. At least a half of the 17 general goals are directly linked to water resources, with two specifically so:

Goal 6: Ensure availability and sustainable management of water and sanitation for all.

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Slovenia has committed itself to realise all of the goals; the commitment becoming effective on 1 January 2016 for 15 years.

(Agenda 2030, 2015)



Today, we know that transformation is necessary; all countries have signed the agreement, yet at the level of individual, not enough has changed to bring improvement or even stop environmental degradation.

“Our daily actions should be in line with the awareness that water is our most important strategic resource. They should also be in line with the ethical position that we must preserve pure drinking water for our future generations. As long as we have enough water, we will also have health, safety, food, forests, energy and moderate welfare. Let us not wait to be forced to act differently by unfavourable circumstances, as in such case there is not enough time to think or opportunities to keep the quality of life we are used to.” (Kajfež Bogataj, 2014, 286)

The following two paragraphs from Agenda 2030 (2015) are particularly important:

“The future of humanity and of our planet lies in our hands. It lies also in the hands of today’s younger generation who will pass the torch to future generations. We have mapped the road to sustainable development; it will be for all of us to ensure that the journey is successful and its gains irreversible.”

“We recognise that there are different approaches, visions, models and tools available to each country in accordance with its national circumstances and priorities to achieve sustainable development; and we reaffirm that planet Earth and its ecosystems are our common home and that “Mother Earth” is a common expression in a number of countries and regions.”

It becomes misleading and even harmful when we, as a community, rely solely on our achievement and advantage compared to the rest of the world. At the moment, Slovenia is considered one of the least polluted areas in the world, though this is at risk. If we do not change, the opportunity will pass and never reappear.

“Slovenia faces water stress, typical of which is the simultaneous occurrence of flood, drought and groundwater level decrease. Flood and drought areas are in unusual close proximity and have groundwater supply reduction in common. Owing to negative water balance, the water safety of the country, which is an important part of the country’s national safety, is at risk. Water abundance is flowing away from us, and we have no substitute for water; there is no industrial substitute for the most precious natural resource.” (Komat, 2017, 152)

Slovenian companies often equate social responsibility with care for employees, clients and local communities. Hardly anyone sees the broader picture of their responsibility. A new perspective in terms of environmental change shows that we must wake up and transform such mentality into a comprehensive global one. Globalisation does not only mean individual countries are affected by global trends, it also means that individual countries and regions contribute to the situation elsewhere in the world.

The new attitude must be assumed by every individual, not only companies and major communities, we must all be responsible by living and using available resources wisely. We only have one planet and we are merely its guests.



“It is becoming increasingly difficult to recognise such long-term change patterns, which have been in course globally for decades, and being mutually intertwined, it is getting harder for countries to solve environmental problems unilaterally. Even large groups of countries that take action together (such as the EU) are unable to solve them alone.” (Poročilo o okolju, 2017, 7)

Environmental risk must be looked at from a global perspective. The majority of water pollution and illegal waste disposal cases are local in nature; phenomena, such as acid rain, groundwater pollution and major spillage of chemicals or oil, occur predominantly regionally. Both categories appear simultaneously around the world, which is why the pattern seems global, the problems not strategic as civilisation survival is not affected or endangered. The risk caused by new environmental problems affecting the global ecosystem is actually strategic. Over the last 40 years, the 600% increase of chlorine content in the atmosphere is not only evidenced in countries where chlorine compounds are produced and, as such, primarily to blame for such increases, but everywhere, from the surface to the upper atmosphere. This increased chlorine concentration affects the main process that balances the radiation permeated through the atmosphere. If we allow chlorine concentration to keep on increasing, the life of all plant and animal species on the planet will be endangered. (Summarised from Gore, 1994, 13)

“Environmental endeavours are moving in the direction of a low-carbon society, a circular economy, resistant ecosystems, and macroeconomically sustainable development models. These are the foundations of welfare, which are also recognised in the EU environment action programme titled “Living well within the limits of our planet”. It sounds nice but this “vision is no longer environmental, if it ever was”. For its realisation, we cannot implement environmental protection policy separately from the policies of other sectors, such as agriculture, transport, energy industry, tourism, as it is inseparably connected to broader economic and social development. With the increasingly better understanding of the features of environmental challenges in Europe and their co-dependency with economic and social systems in the globalised world, the awareness that we will not be able to cope with this with our current knowledge and established management methods is increasing.” (Poročilo o okolju, 2017, 3)

Step One –Awareness Raising and Informing

Social responsibility is necessary in order to live in better conditions and with better relationships. Environmental responsibility has become vital in terms of existence itself. This is why it should be a condition, not merely an option.

The air, forests, soil, meadows, and water are not only physical and chemical phenomena, not only goods or means intended for our use. “The right way would be to adapt and outwit nature with our knowledge about it. The ways out of the mess are new ways to co-exist by taking into consideration the centennial wisdoms of our ancestors.” (Komat, 2017, 126)

In the spring of 2019, we could hear the strong messages given by the sixteen-year-old Swedish girl Greta Thunberg to the world: she presented a critical perspective of her own



future at the European political summit in Strasbourg. Throughout her speech and at its conclusion, she received loud applause. Here is a fragment of her speech: "Everything and everyone needs to change. The bigger your platform, the bigger your responsibility." Let us ask ourselves about how many of those present applauding her took a step towards change that same day? How many of them refused a plastic straw in their lemonade, a plastic bottle or a plastic bag that day? Will they decide to buy glitzy toxic products when shopping or will they opt for something else? Who among them or us will decide to change their diet and, instead of a steak on their plate, enable food production for eight children?

It is, however, not wise to do research instead of take action. Those who claim that we should not do anything until more research is done are trying to reduce the burden of proof even now when the crisis is deepening. (Summarised from Gore, 1994, 21)

The entire world is aware that this is necessary, but hardly anyone truly changes. Change requires commitment and perseverance, and, most of all, exit from comfort zones. It is difficult to start, but, as long as commitments are written in infinitives, such as to ensure, to maintain, to prevent, and the like, not many people will take action. It is time to add a subject, the most effective being the first person singular, and time to these infinitives. Not the future tense or the past tense, but now.

History has taught us that millennia are not always needed for major climate change; it may strike suddenly. Throughout history severe climate change has occurred in a few decades. Since these are two strong factors affecting imbalance, they are still increasing, such change no longer requires decades.

Some people claim that the solution lies in the latest technology, be it nuclear technology or genetic engineering. Others believe that the quality of life can only be improved by radically deducing our dependence on technology. We can find the right solution only if we rediscover and treat relationships between the people and the Earth. (Summarised from Gore, 1994, 19)

Nature also has solutions for human kind, but it is impossible to realise them until we are ecologically aware. The world will not be changed by new technology, but by new awareness, new ethics, new mentality and a different culture of co-existing with the world around us. (Summarised from Komat, 2017, 142)

We need knowledge to change. We need awareness raising; constant, uninterrupted and persistent informing. We need to present new opportunities, new methods, new role models and patterns which individuals can assume without any problems, without objections and without hesitation. Most of all, we must create a support environment where it is simpler to use suitable solutions and make sounder decisions. Even though our seas are not yet full of dead fish, or our drains stinking of animal faeces, or our taps still giving us drinking water, this does not mean we are not threatened by the same dangers. The support environment means that the leaders of small, large and the largest communities must order and make sure that individuals be able to make better, more acceptable and easier decisions regarding actions or products.



Change is a process that starts by becoming aware of a problem and accepting responsibility for it. Only this can trigger sincere new attitudes, which in environmental terms are the only ones that can be successful and stable in the long run. Without any compromises or tolerance. It is only a decision. Sounds simple, but it is very difficult, as every change is connected with discomfort.

“Everyone must change their attitude towards water. The first step is to deepen our knowledge about water. We must start to constantly monitor the events surrounding the quality and quantity of water resources. As citizens, we should get involved in as many water-related decisions as possible. Let us try to decrease our water cycle impact and protect water and water resources; water saving also helps, starting in the kitchen or the bathroom.” (Kajfež Bogataj, 2014, 287)

So, how do we approach transformation? We need information, knowledge and responsibility, followed immediately by commitment to goals and newly set values. And finally, action, step-by-step, consistently and persistently.

Al Gore (1994, 344) also believes that the right solution lies in raising public awareness on the seriousness of the danger threatening the global environment. Those who see personal benefits in status quo will most likely keep on hampering every important change until the citizens who are worried about the global ecological system will speak out and force their leaders to restore balance on the Earth.

Informing involves all means and types of education, the most effective being education that open new perspectives through narration and examples. Stories. Fairy tales. Plays. Films. Animations. These are all tools that we can use to get emotions out of people and establish communication with the part of their psyche that accepts what would otherwise more likely be rejected.

We are talking about our common future, regardless of generation, age, profession, activity, nationality, financial status or any other determinant. By giving a new perspective to young people with our own attitude, we create a double benefit; we direct ourselves to act differently, and, at the same time, become examples, role models. Namely, leaders are those that provide examples and take action, not those who are merely agile speakers.

Judging by common sense, it seems that a sand grain that falls onto a pile only moves a few other grains and does not really affect the pile as a whole. But every individual grain in such sand pile substantially affects everything that follows. It holds potential for future changes, both big and small. It is surprising that there is an exact mathematical ratio between the number of sand grains moved by every new grain and the frequency of different-sized slides of sand. (Summarised from Gore, 2014, 346)

Nobody is alone in water responsibility. Nobody can save water alone.

“We know that active involvement in water management is vital as we must overcome cultural, political and social tension internationally and locally as soon as possible. Water is simply too important to be decided about by a handful of people. We should also be aware that the water kingdom of our planet is not just ours, but that all beings have exactly the same right to water.” (Kajfež Bogataj, 2014, 287)



To conclude, let us not forget what the English metaphysical poet, John Donne, wrote in the 16th century; words used by Ernest Hemingway as foreword to his book with the same title:

For whom the bell tolls

No man is an Island, intire of it selfe; every man is a peece of the Continent, a part of the maine; if a Clod bee washed away by the Sea, Europe is the lesse, as well as if a Promontorie were, as well as if a Mannor of thy friends or of thine own were; any mans death diminishes me, because I am involved in Mankinde; And therefore never send to know for whom the bell tolls; It tolls for thee.

References

- Bricelj, M., Natek, K., Skorupan, M. (2003) *Zaživimo z vodo*. Priročnik. Ljubljana: Karantanija.
- Cerar, G. (2018). Svetovni dan voda: Kako izvajati ustavno pravico do pitne vode tudi v praksi? RVSLO. Pridobljeno s <https://www.rtv slo.si/okolje/novice/svetovni-dan-voda-kako-izvajati-ustavno-pravico-do-pitne-vode-tudi-v-praksi/449632>
- Gore, A. (1994). *Na poti k ravnovesju*. Bohinj: Inštitut za ekološke alternative.
- Horvat, M. (2008) Krave kot ekološke bombe, *Mladina* 37. Pridobljeno s <https://www.mladina.si/44713/kr>
- Kajfež Bogataj, L. (2014). *Planet Voda*. Ljubljana: Cankarjeva založba.
- Kateri so glavni onesnaževalci vode (2015). *Primavoda*. JP VODOVOD-KANALIZACIJA. Pridobljeno s <http://www.primavoda.si/vse-o-vodi/kateri-so-glavni-onesnazevalci-vode>
- Kastner M. (2019). Problem zaščite obmejnih vodonosnikov,
- Komat, A. (2017). *Zemlja, voda, seme*. Ljubljana: Buča.
- Novice (2019) Obveščevalnik, Tax-Fin-Lex.
- Petkovšek, J. (2008). Voda ni nekaj samoumevnega! *Dnevnik*. Pridobljeno s <https://www.dnevnik.si/1042216333>
- .. *Poročilo o okolju v Republiki Sloveniji*. (2017). Ljubljana: Vlada RS. Pridobljeno s http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/pomembni_dokumenti/porocilo_o_okolju_2017.pdf
- Rejc Buhovac, A., Hren, A., Fink, T., Savič, N. (2018). *Trajnostne poslovne strategije*. Priročnik. Ljubljana. Spirit. Pridobljeno s <http://www.unikatum.si/wp-content/uploads/2018/04/Prirocnik-trajnostne-poslovne-strategije-JAPTI.pdf>
- Slovensko društvo za zaščito voda
<https://sdzv-drustvo.si/>
- Smrdu, A., Zmazek, B., Vrtačnik, M., Glažar, S., Godec, A., Ferk Savec, V. (2014). *Onesnaževanje vode. Kemija 1. Učbenik*. Pridobljeno s <http://eucbeniki.sio.si/kemija1/588/index2.html>



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.. Spremenimo svet: Agenda za trajnostni razvoj do leta 2030. (2015). Ljubljana: Vlada RS. Pridobljeno s [http://www.svrk.gov.si/fileadmin/svrk.gov.si/pageuploads/Spremenimo_svet - Agenda_za_trajnostni_razvoj_2030_1_.doc](http://www.svrk.gov.si/fileadmin/svrk.gov.si/pageuploads/Spremenimo_svet_-_Agenda_za_trajnostni_razvoj_2030_1_.doc)

