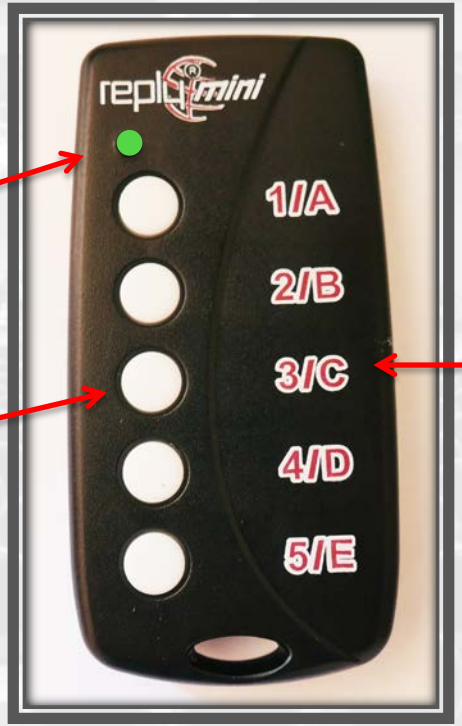
World Water Week 2017

Nature-Based Solutions (NBS) for water

Green Light

Buttons



Letters

(only available options are activated for each question)

CLICKER

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1. NBS are inspired and supported by nature and use, or mimic, natural processes to contribute to the improvement of:

a) **Water quality issues** — 20%

b) **Water resource availability issues** — 20%

c) **Water-related disaster risk reduction (e.g., floods)** — 20%

d) **All of the above** — 20%

e) **None of the above** — 20%

CORRECT ANSWER

D

Nature-based solutions (NBS) are inspired and supported by nature and use, or mimic, natural processes to cost effectively contribute to the improved management of water. NBS usually offer multiple water-related benefits and often help address water quantity, quality and risks simultaneously.

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2. The defining feature of a NBS is that it involves using a “natural” ecosystem.

a) **True**

50%

b) **False**

50%

CORRECT ANSWER

B

The defining feature of a NBS is **not** whether an ecosystem being used is “natural” but whether natural processes are being proactively managed to achieve a water-related objective. A NBS uses ecosystem services to contribute to a water management outcome. A NBS can involve conserving or rehabilitating natural ecosystems and/or the enhancement or creation of natural processes in modified or artificial ecosystems.

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3. Because of their broad scope, NBS can exclusively applied at the landscape scale.

a) True

50%

b) False

50%

CORRECT ANSWER

B

Depending on the natural process that they use (or mimic), NBS can just as well be applied at microscale (e.g. using microbial metabolic processes in a dry toilet).

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4. Which of the following is not an NBS?

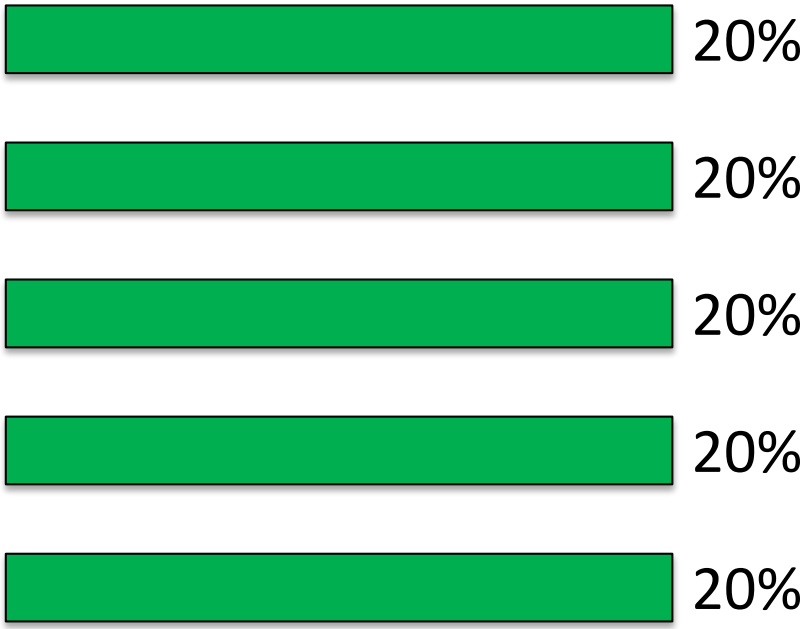
a) Conservation agriculture

b) Irrigation canals and ditches

c) Riparian buffer strips

d) Constructed wetlands

e) Urban green spaces



CORRECT ANSWER

B

Irrigation canals and ditches do not use (or mimic) natural processes.

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5. Which of the following is *definitely* an NBS?

a) **Rainwater harvesting** — 20%

b) **Water demand management** ***(reducing water use)*** — 20%

c) **Weather forecasts and radio alerts** — 20%

d) **Soil and plant moisture sensing devices** — 20%

e) **Mulching** — 20%

CORRECT ANSWER

E

Mulching reduces water loss and improves crop yields in fact, water availability is often constrained by lack of mulching material (e.g. because of burning or grazing on stubble after harvest).

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6. NBS are not a new and innovative approach to water resources management, many NBS have been around for millennia.

a) True

50%

b) False

50%

CORRECT ANSWER

A

Although certain recent advances in the biological and environmental sciences have made certain NBS increasingly efficient (and cost-effective), NBS have been around since the dawn of civilization. They simply were not necessarily recognized as such. This is where traditional knowledge can play a very important role in reestablishing NBS as a more common approach to addressing water resource management challenges.

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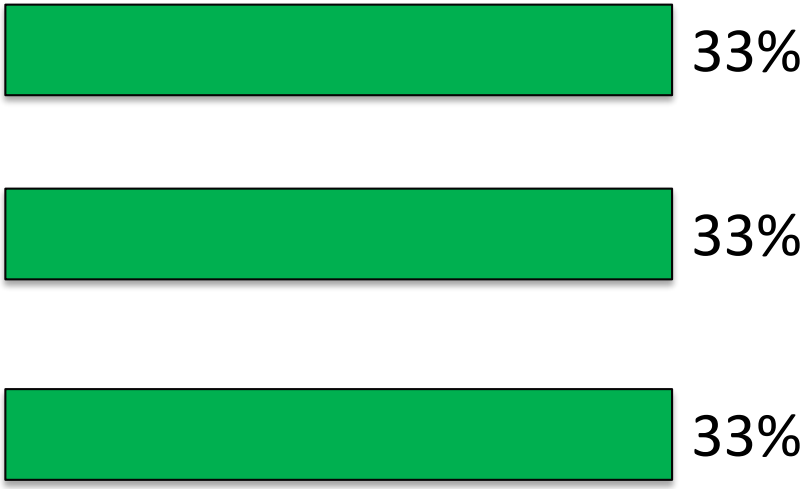
7. NBS are more cost-effective than man-made (grey) infrastructure.

a) Always

b) Sometimes

c) Never



CORRECT ANSWER

B

NBS are widely claimed to be “cost-effective”. Indeed, there are many examples of where this is clearly the case, but this does not mean they are always cheap. The actual costs of NBS obviously vary considerably according to scale, location and type of application. For example, ecosystem restoration costs can vary between a few to several million dollars per hectare (Figure 1.6). The larger costs for restoration highlight that the sensible strategy is to conserve relevant ecosystems, hence avoiding the need for restoration. Overall, whilst costs of restoration can be high, and require long- term management investment, the resulting economic benefits to people can outweigh such costs (see e.g. Alexander and McInnes 2012). Another factor to consider in cost-comparisons is that the evidence is overwhelming that costs for large-scale grey infrastructure are systematically biased towards underestimation, with actual costs averaging 96% higher than estimated costs (Ansar et al. 2014).

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8. NBS (green infrastructure) are always more appropriate and sustainable than man-made (grey) infrastructure.

a) True

50%

b) False

50%

CORRECT ANSWER

B

There has been debate regarding whether green or grey infrastructure solutions are best (e.g. Palmer et al. 2015). This, however, is a false dichotomy. There are examples of where nature-based approaches offer the main or only viable solution (for example, landscape restoration to combat land degradation and desertification), examples of where only a grey solution will work (for example supplying water to a household through pipes and taps), but in most cases green and grey infrastructure will and should be working together. Water management is already based on a combination of green and grey since ecosystems are usually the origin of water subsequently managed through grey infrastructure.

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9. NBS often offer co-benefits beyond water-related ecosystem services. Which of the following represent potential co-benefits?

a) **Improved fisheries** — 20%

b) **Improved timber and non-timber forest resources** — 20%

c) **Biodiversity** — 20%

d) **Landscape values and cultural and recreational services** — 20%

e) **All of the above** — 20%

CORRECT ANSWER

E

Ecosystem creation or restoration can create or improve fisheries, timber and non-timber forest resources, biodiversity, landscape values and cultural and recreational services. The value of some of these benefits can be substantial and tip investment decisions in favour of NBS.
A key advantage of NBS is also the way in which they contribute to building overall system resilience. Assessments of the returns on investments in NBS often do not factor in these positive externalities, just as those for grey infrastructure rarely take into account negative environmental and social externalities. Indeed, single-purpose, built infrastructure for water supply in one location can even result in a loss of supply or quality in other hydrologically linked locations. All benefits, and not just a narrow set of hydrological outcomes, need to be factored into assessment of investment options.

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10. NBS are central to addressing climate change.

a) True

50%

b) False

50%

CORRECT ANSWER

A

UN-Water (2010) stressed that the impacts of climate change are largely on hydrology and water resources. The changing water cycle is central to most of the climate change-related shifts in ecosystems and human well-being and the impacts of climate change arise from ecosystem change (Commission on Sustainable Development 2007; IPCC 2014). The implication of this is, therefore, that ecosystem based management should be the primary means of climate change adaptation – and this largely involves using NBS for water. NBS are already recognised in the climate change agenda. National Adaptation Programmes of Action, under the United Nations Framework Convention on Climate Change, often highlight ecosystem based adaptation approaches. The strong interdependencies between the carbon and water cycles also create significant synergies between climate change mitigation and adaptation

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11. Taking a bath saves more water than taking a shower

a) True

50%

b) False

50%

CORRECT ANSWER

B

False, it usually takes about 70 gallons to fill a bathtub, while a 5-minute shower uses 10-25 gallons on average

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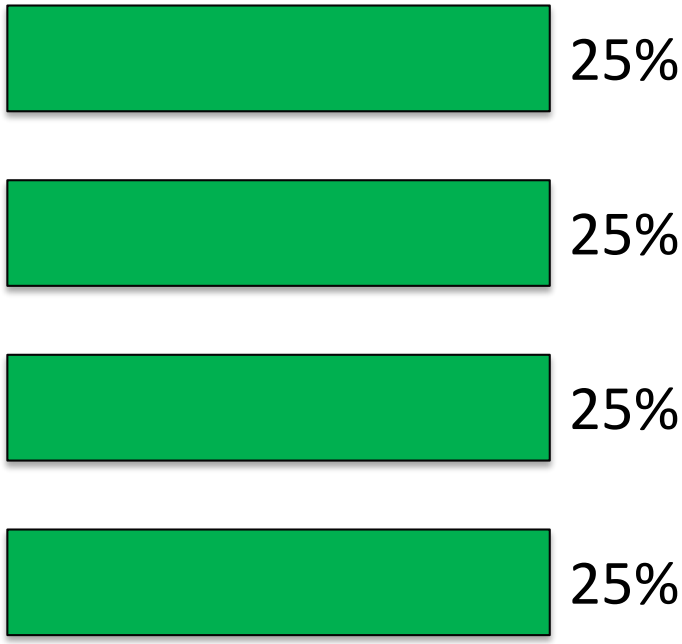
12. What was the theme of World Water Day 2016?

a) Better Water, Better Jobs

b) Why waste water?

c) Water and Sustainable Development

d) Water and Energy



CORRECT ANSWER

A

The 2016 theme of "Better water, better jobs" highlighted the correlation between water and job creation, both directly and indirectly by water sources around the globe. As water scarcity becomes more of a reality, industries heavily dependent on water like textiles and agriculture are at risk of increased costs, which threatens salaries and jobs. Increased costs may then be passed on to consumers.

The other topics were as follows:
b) 2017 c) 2015 d) 2014

13. Among the global Multilateral Environmental Agreements, which was the first to pick up on the importance of nature-based solutions?

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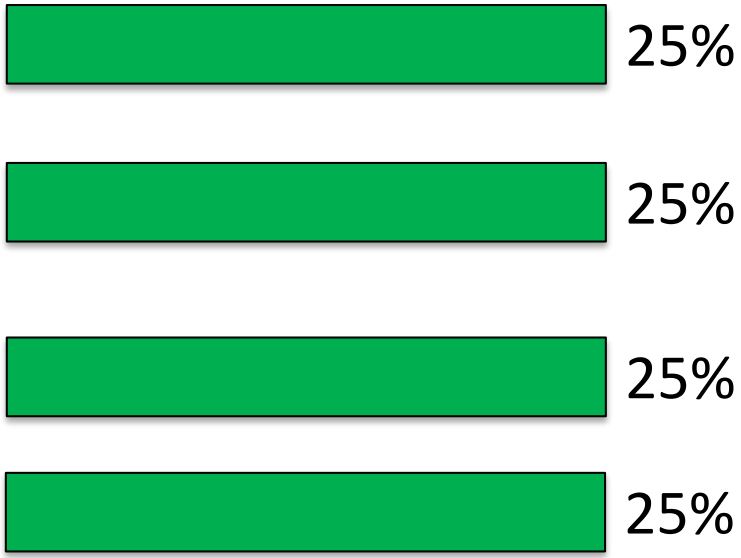
a) United Nations Convention to Combat Desertification

b) Convention on Wetlands (Ramsar Convention)

c) Convention on Biological Diversity

d) World Heritage Convention



CORRECT ANSWER

B

Among the global MEAs, the Convention on Wetlands (Ramsar, 1971), picked up on the topic very early (1971). Its Articles recognise the role of wetlands as regulators of water, pre-dating current attention to the topic in global policy forums and agreements by about 40 years. But it was not until the late 2000's that the Ramsar Convention started to actively pursue the positives regarding the wetland-water relationship, largely due to the emerging realisation that to protect wetlands required better engagement regarding drivers of change. Nature-based solutions are at the heart of preventive and restorative measures to combat land degradation under the United Nations Convention to Combat Desertification (UNCCD).

14.) Which of the following is not an indicator for Sustainable Development Goal 6 (Ensure availability and sustainable management of water and sanitation for all)?

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a) **Proportion of wastewater safely treated** 25%

b) **Proportion of bodies of water with good ambient water quality** 25%

c) **Proportion of population who can afford clean bottled water** 25%

d) **Change in the extent of water-related ecosystems over time** 25%

CORRECT ANSWER

C

a) Indicator for SDG 6.1; By 2030, achieve universal and equitable access to safe and affordable drinking water for all

b) Indicator for SDG 6.3 ; By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

d) Indicator for SDG 6.6; By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

15. What song is this?

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…”Don't go chasing waterfalls

Please stick to the rivers and the lakes that you're used to”…

a) **Waterfalls - TLC**

25%

b) **Take Me To The River – Talking Heads**

25%

c) **Cry Me a River – Justin Timberlake**

25%

d) **Bridge Over Troubled Water - Paul Simon**

25%

CORRECT ANSWER

A

♪ Don't go chasing waterfalls

Please stick to the rivers and the lakes that you're used to

I know that you're gonna have it your way or nothing at all

But I think you're moving too fast♫

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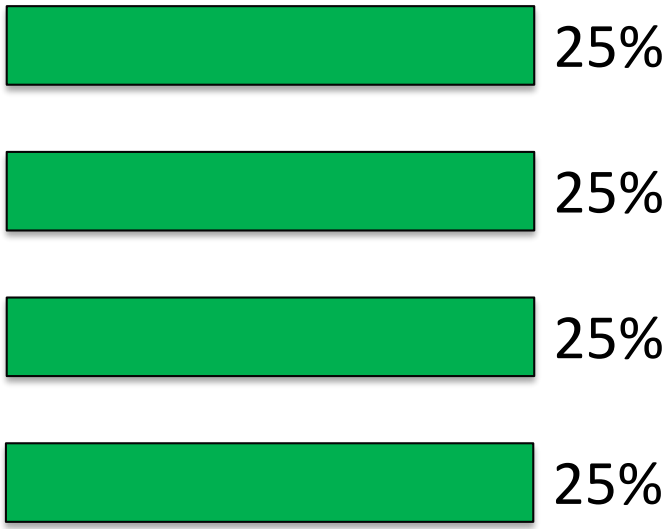
16. Which of the following countries consumes the most bottled water per capita?

a) South Africa

b) U.S.

c) Saudi Arabia

d) Italy



CORRECT ANSWER

D

Italy – 184 liters per person as of 2004,
according to the Beverage Marketing Corporation.

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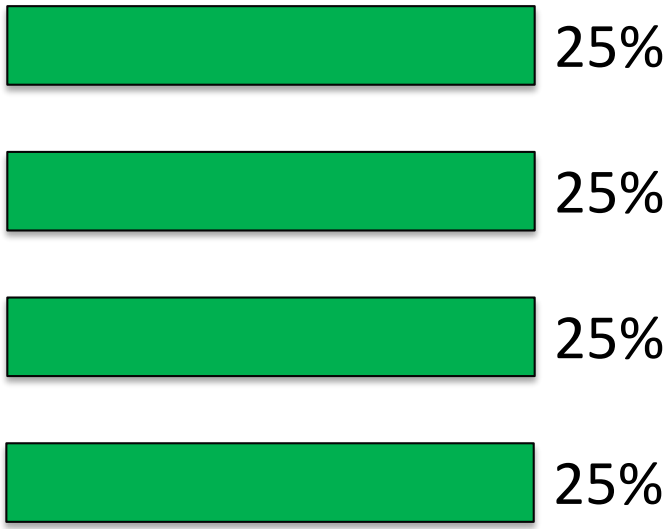
17. Which of these countries is the most water-scarce in the world, in terms of available renewable water resources per per capita?

a) **Syria**

b) **Iraq**

c) **Jordan**

d) **Kuwait**



CORRECT ANSWER

D

According to FAO AquaStat, Kuwait has less than 7 m^3 of renewable water resources per capita per year. Syria has less than 800; Iraq has around 2,700 and Jordan has 145 m^3 per inhabitant per year. These figures do not take into account recent changes or movement of population due to conflict or natural disasters.

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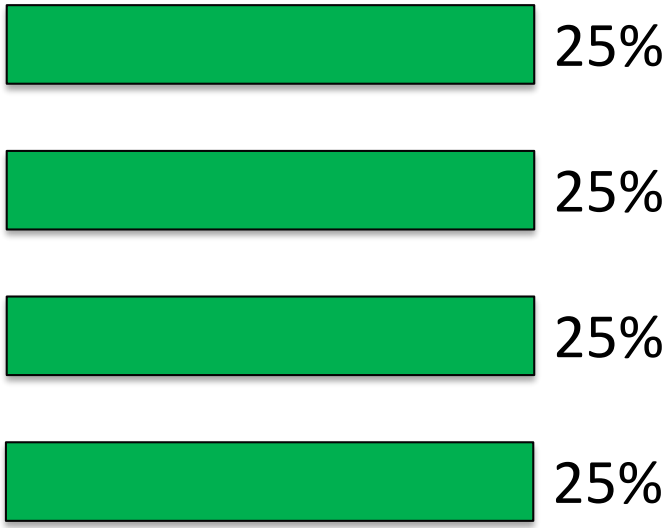
18. Which species is threatened by the increased winter flow in freshwater streams due to global warming?

a) **Salmon**

b) **Atlantic mackerel**

c) **Crawfish**

d) **Striped bass**



CORRECT ANSWER

A

Earlier snowmelt due to global warming will increase the rate of winter flow in freshwater streams, causing the fast-moving water to scour riverbeds when delicate salmon eggs and young are present. Summertime flows, in turn, will be reduced, possibly leading to a decline in freshwater habitat for adult salmon.

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19. You can never drink too much water

a) True

50%

b) False

50%

CORRECT ANSWER

B

Drinking significantly more water than we need can lead to 'water intoxication,' which can lead to fatal cerebral and pulmonary edema. Some amateur marathon runners have died in this manner.

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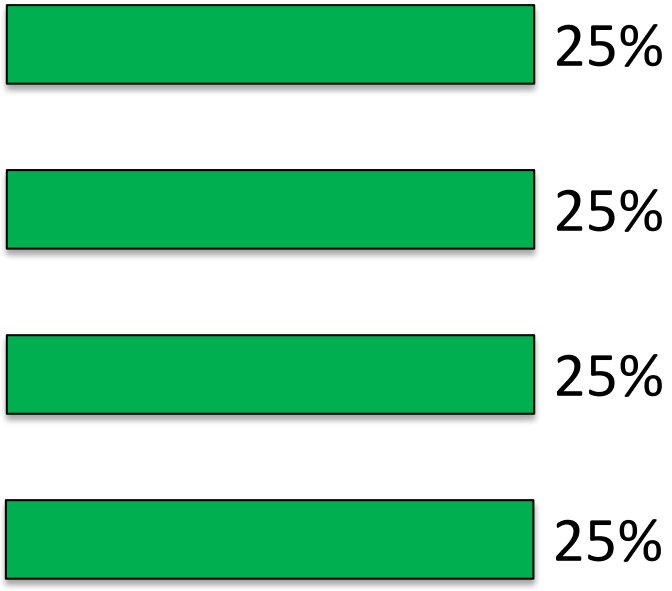
20. Human brains are _% water.

a) 45

b) 55

c) 65

d) 75



CORRECT ANSWER

D

Human brains are roughly 75% water.