Sustainable in only 10 steps!
A short summary to help your institution to become a sustainable business

Derived from

BIAZA SUSTAINABILITY GUIDE
FOR ZOOS AND AQUARIUMS, by BIAZA Environmental Sustainability and Climate Change Working Group, June 2013 (1st Edition, Draft v3)

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AZA Green Guide Volume I & AZA Green Guide Volume II, March 2013

Introduction

Over the years there has been a growing realisation that the current model of development is unsustainable. In other words, we are living beyond our means. We are consuming too many resources, generating too much waste, and causing irreversible damage to the environment and the climate. The increasing burden we are placing on the planet cannot go on forever *(BIAZA 2013, p.27)*.

Climate change and the misuse of natural resources threaten both wildlife and humanity. Zoos and aquariums have an exceptional opportunity to both lead by example and engage the public in a vital and timely dialogue. Acting sustainably means meeting society's needs without compromising the future. Zoos and aquariums have a special responsibility to act sustainably, as they care for live animals and run breeding programs for endangered species *(BIAZA , 2013, p.3.).*
Not only do animal collections have an inherent investment in protecting wild habitats and resources, but they also have an amazing potential to influence a wide audience. In 2010 a socio-economic impact assessment calculated that over 140 million people visit the 340+ EAZA institutions every year. This provides a fantastic opportunity engage visitors in learning more about sustainability and guiding them to change their behaviours. However this will only be truly valuable if zoos and aquariums themselves lead by example.

Looking ahead, **GEO-5** (UNEP's Global Environmental Outlook) suggested that six key 'scenarios and transformations' are needed to help turn the situation around:

1. Transform human consumption (not only production)
2. Shift motivations and values
3. Accelerate the transition to sustainability
4. Forge a new social contract
5. Apply adaptive management and governance (i.e. learn by doing and adjust course accordingly), and
6. Develop clearer long-term targets and international accountability

The best way to incorporate these six scenarios and transformations into the running of an organisation is to develop a sustainability plan *(BIAZA, 2013, p.7.)*

How to develop and maintain a Sustainability Plan

Green Team

Establish a group of personnel ranging from upper-level managers to representatives from all departments that are interested in sustainability and/or are already involved in sustainability efforts. Roles and responsibilities should be clearly articulated for the Green Team members.
The Green Team is responsible for creating a sustainability mission and/or vision statement, quantifying operational baselines, prioritizing sustainable practice opportunities and strategies, and developing a dynamic Sustainability Plan. *(AZA, 2013, Volume I, p. 6, 7, 8)*

To create a dynamic sustainability plan, zoos and aquariums need only rely on their existing staff expertise and commit to reinvesting the monetary savings earned from implementing each year's sustainable practice strategies into the following year's sustainable practice strategies.

5 Steps to developing and maintaining a Sustainability Plan *(AZA, 2013, Volume 1, p. 8, 9)*

1. Conduct inventories to quantify and document the monthly unit usage amounts (or generation/discharge amounts) and associated euro (or dollar) spent amount within one or all topic areas (chemical, energy, fuel, waste, water) over the past 12 months.
2. Identify which Sustainable Practice Strategies (AZA, 2013, Volume 1, p.8 & AZA, 2013, Volume II, p. 6) are already met in each topic area and indicate the year initiated on the corresponding scorecard *(AZA, 2013, Volume II, p.38-50)* and tally the total number of baseline points earned.
3. Select which new Sustainable Practice Strategies will be implemented for the current Sustainability Plan year.
4. Tally and compare the unit usage and money spent from those at the beginning – to those at the end – of the Sustainability Plan year to assess progress. Repeat steps 3 and 4 annually!

Sustainable in 10 Steps

Over the following pages advice and guidance is given about the following 10 steps towards sustainable management and running of zoos and aquariums:

1. Raising Awareness
2. Chemical Management
3. Construction
4. Energy Management
5. Fuel Management
6. Water Management
7. Waste Management
8. Sustainable Travel
9. Sustainable Procurement
10. Innovation

1. Raising awareness

We are so used
to running water from the tap,
to switching on lights and leaving them on,
to a car always filled with fuel,
to turning on the thermostat when we feel cold,
to leaving our computer on because it is easy,
to a marvellous world in which everything is within reach!
To a marvellous world with a great abundance of wildlife, clean air, clean soil and clear water!

We are not used to thinking about the obviousness of this all, and that is what awareness is about… the origin/root of creating a sustainable world. Zoos have a great potential! By setting a good example and showing what we do to run a sustainable business, we can create awareness for all our many staff and visitors. But, we have to start with ourselves.

To increase awareness and support of the zoo or aquarium's Sustainability Mission, Vision, and/or Plan, transparent and consistent communication should be maintained with employees, visitors, suppliers, and the community. Information should include success stories as well as identify challenges that have been encountered. These types of communication will provide direction and context for individuals to participate and can inspire problem-solving feedback that may contribute to goal accomplishment.

General Awareness Recommendations can be found on **(***AZA, 2013,Volume 1, p. 10-11)*

More information concerning:
- Internal Communication
- External Communication

can be found on *(AZA, 2013, Volume II, p. 8-9)*

Awareness resources can be found here: *AZA, 2013, Volume 1, p.11*

2. Chemical Management

Some wastes contain chemicals that are hazardous to the environment and people. Once these hazardous chemicals are present in the environment, it is often very difficult to get rid of them. Therefore it is of utter importance that we know exactly what kind of chemicals we use, how we can separate them from other wastes and how we can process them in a safe and reliable way. Most importantly: if you can avoid using chemicals, then do so!

General Chemical Management Recommendations can be found on *AZA, 2013, Volume I, p. 12 – 13*

1. The Green Team should assess the organization's collective chemical usage amount over the past year by conducting a **Chemical Inventory**.

2. The **Chemical Inventory** should be conducted or updated on an annual basis (or more frequently depending on local regulations) and should:
   - Identify the type and quantity of all chemicals used onsite over the past 12 months.
   - Identify the ways in which each chemical was and still is currently used throughout the organization and by outside contractors.
   - Stipulate the purchasing practices used for each chemical, including quantity ordered and vendor information. Describe the management, handling, and storage requirements for each chemical. Identify the potential environmental hazards and disposal protocols for each chemical.

3. Results from the **Chemical inventory** should be used to determine if there are chemical management related sustainable practice strategies your organization can implement to reduce or eliminate your chemical usage unit amount, or switch to greener alternatives over the course of the following year.

More information concerning:
- Chemical Inventory
- Incorporation into your Sustainability Plan
- Sustainable Practice Strategies for Chemical Management

can be found on *AZA, 2013, Volume 2, p.11 -129.*

Chemical management resources can be found on *AZA, 2013, Volume 2, p. 12*

3. Construction

Sustainable construction means that buildings are designed and used with respect for people and the environment. It is not only about energy use, but also about responsible water use, recycling materials and avoiding depletion of natural raw materials. Sustainable construction and remodelling encourages innovation and contributes to a better environment.

General Construction Recommendations can be found on *AZA,2013 Volume 1, p.14*

1. The Green Team should asses the organisation's collective construction management strategies for all construction projects over a designated budget amount, including new buildings and projects, renovations, and temporary exhibits, by conducting a **Construction Inventory**.

2. The **Construction Inventory** should be conducted or updated on an annual basis and should:
   - Identify the ways existing buildings and exhibits, as well as new capital constructions projects, incorporate BREEAM* or LEED** Certified, Green Globes and / or Wildlife Friendly components.
   - Stipulate purchasing practices including vendor information for these components.

3. Results from the Construction Inventory should be used to determine if there are construction-related sustainable practices strategies your organization can implement to reduce or eliminate your non-sustainable construction materials usage amount, or switch to greener alternatives over the course of the following year.

More information concerning:
- Construction Inventory
- Incorporation into your Sustainability Plan
- Sustainability Practice Strategies for Construction

can be found on AZA, 2013, Volume 2,p. 13, 14 and 15.

Construction resources can be found on: *AZA, 2013, Volume 2, p. 15*

* BREEAM = Building Research Establishment Environmental Assessment Method
**LEED = Leadership in Energy and Environmental Design

4. Energy Management

Energy use has become a matter of complex and strategic social, economic and environmental importance worldwide. Against this backdrop, businesses are challenged to deliver responsible and effective energy management. *BIAZA, 2013, p. 11*

General Energy Management Recommendations can be found on *AZA, 2013, Volume 1, p. 16*

1. The Green team should assess the organization's collective energy unit usage amount over the previous year by conducting an **Energy Inventory**.

2. The **Energy Inventory** should be conducted or updated on an annual basis and should:
   - Identify the type and quantity of energy (electricity, natural gas, solar, wind, hydro, geothermal, fuel cells, gasification, mega-generator, etc.) used and/or generated onsite over the previous 12 months.
   - Stipulate purchasing or generation practices including vendor information.
   - Calculate British Thermal Units (BTUs) per square meter (or foot) for each building and exhibit as well as your organization's total BTU consumption over the past year.

3. Results from the **Energy Inventory** should be used to determine if there are energy management related sustainable practices strategies your organization can implement to reduce or eliminate your energy usage unit amount , or if you should switch to greener alternatives over the course of the following year.

More information concerning:
- Energy Inventory
- Incorporation into your Sustainability Plan
- Sustainable Practice Strategies for Energy management

can be found on: *AZA, 2013, Volume II, p. 16, 17, 18.*

Energy management resources can be found on: *AZA, 2013, Volume 2,p. 18, 19*

Other **energy saving interventions** can be found on *BIAZA, 2013, p. 14-15.*

5. Fuel management

By establishing an annual monitoring program for fuel use, you empower your organisation with the information that is needed to move towards reductions and a more efficient use of fuel resources. *(AZA, 2013, Volume 1, p. 18)*

General Fuel Management Recommendations can be found on *AZA, 2013, Volume 1, p. 18*

1. The Green Team should assess the organization's collective fuel usage amount over the past year by conducting a **Fuel Inventory**.

2. The **Fuel Inventory** should be conducted or updated on an annual basis and should:
   -Identify the type and quantity of all fuel (gasoline, propane, diesel, oil, etc.) used and/or generated onsite over the past 12 months.
   -Identify all fuel-powered equipment (e.g. combustion engines, vehicles, generators, etc.) and vehicles used onsite and calculate the amount of fuel used to power each (Fuel Efficiency for vehicles)
   -Stipulate the purchasing practices used for each fuel, including quantity ordered and vendor information.
   -Describe the management, handling, and storage requirements for each fuel.
   -Identify the potential environmental hazards and disposal protocols for each fuel.
   -Conduct a personnel commute and travel audit.

3. Results from the **Fuel Inventory** should be used to determine if there are energy management related sustainable practices strategies your organization can implement to reduce or eliminate your fuel usage unit amount , or if you should switch to greener alternatives over the course of the following year.

More information concerning:
- Fuel Inventory
- Incorporate fuel management into your Sustainability Plan
- Sustainable Practice Strategies for Fuel Management

can be found on: *AZA, 2013,Volume 2,p. 20, 21*

Fuel management resources can be found on: *AZA, 2013, Volume 2, p. 21, 22*

6. Water management

Reducing our water footprint will be a key challenge over the next 10-20 years. Within Zoos and Aquaria, taking positive action now will provide both substantial financial savings and in many cases also support adaptation to climate change (*BIAZA, 2013, p.20*).

General Water Management Recommendations can be found on *AZA, 2013, Volume I, p. 26*

1. The Green Team should assess the organization's collective water usage amount over the past year by conducting a **Water Inventory**.

2. The **Water Inventory** should be conducted and updated on an annual basis and should:
   - Identify all sources (buildings, food preparation, restaurants, landscaping, fountains, pools/exhibits, animal diets, public misters/fountains, etc.) where water was used onsite over the past 12 months.
   - Stipulate purchasing and discharge practices including vendor information.
   - Calculate the amount of water used and/or discharged for each source (in litres or gallons) and their associated costs over the previous year.

3. Results from the **Water Inventory** should be used to determine if there are energy management related sustainable practices strategies your organization can implement to reduce or eliminate your energy usage unit amount , or if you should switch to greener alternatives over the course of the following year.

More information concerning:
- Water Inventory
- Incorporation into your Sustainability Plan
- Water usage reduction

can be found on AZA, 2013, Volume II, p.31, 32, 33

More recommendations about reducing water consumption, reducing waste water issues and useful resources can be found on: *BIAZA, 2013, p. 21-26*

Water Management Resources can be found on: AZA, Volume II, p. 33

7. Waste management

As an example, waste that has been disposed of to landfill is the largest contributor to methane emissions, a greenhouse gas over 20 times more powerful than carbon dioxide. In addition landfilled waste can often lead to pollution of aquatic systems and soils through leachate. As well as the environmental aspects, waste can also be very costly for your organisation. Dealing with your waste more sustainably can often lead to significant financial rewards. *(BIAZA, 2013, p. 16)*

General Waste Management can be found on *AZA, 2013, Volume I, p. 24, 25*

1. The Green Team should assess the organization's collective water usage amount over the past year by conducting a **Waste Inventory**.

2. The **Waste Inventory** should be conducted and updated on an annual basis and should:
   -Identify all waste generating sources (e.g. office supplies, food services, composting, animal feces, etc.) across the organization.
   -Stipulate the disposal practices including waste removal vendor information.
   -Describe the management, handling and storage requirements for each type of waste
   -Identify the potential environmental hazards of each type of waste
   -Quantify the amount of waste generated for each source (e.g. cubic metres, feet) and costs associated with these product losses (e.g. excess food) or waste removal over the previous year

3. Results from the **Waste Inventory** should be used to determine if there are waste management related sustainable practices strategies your organization can implement to reduce or eliminate your waste generation amount , or if your organization could switch to sustainable and/or compostable product alternatives over the course of the following year.

More information concerning:
- Waste Inventory
- Incorporation into your Sustainability Plan
- Sustainable practice Strategies for Waste Management

can be found on *AZA, 2013, Volume II, p. 28, 29, 30*

Waste management resources can be found on: *AZA, 2013, Volume II,p. 30.*

8. Sustainable travel

For many zoos and aquaria, visitor travel may make up the largest part of their carbon footprint. Staff travel from commuting can also account for a large amount of carbon emissions. While the choice of how to travel ultimately lies with the visitor or staff member, zoos and aquaria can use a range of initiatives to encourage staff and visitors to travel more sustainably by writing a travel plan *(BIAZA, 2013, p.33)*

More **information about how to approach sustainable travel in a zoo or aquarium** can be found on**:** *BIAZA, 2013, p. 33-36*

9. Sustainable procurement

Procurement has an important part to play in delivering a sustainable future. By thinking carefully about the goods, services, works and utilities we buy, how we buy them, and who we buy them from, purchasing decisions can contribute to the achievement of sustainable development goals *(BIAZA, 2013, p. 27.)*

General Purchasing Management can be found on *AZA, 2013, Volume I, p. 22, 23*

1. The Green Team should assess the organization's collective bulk product usage amount over the past year by conducting a **Purchasing Inventory**.

2. The **Purchasing Inventory** should be conducted and updated on an annual basis and should:
   -Identify all bulk products (e.g. office, education, landscaping, food/catering, animal diet, custodial, gift shop supplies, etc.) your organization used onsite over the past 12 months.
   -Identify the ways in which purchasing practices incorporate sustainable products within different departments.
   -Stipulate the purchasing practices used for all bulk items, including quantity ordered and vendor information.

4. Results from the **Purchasing Inventory** should be used to determine if there are purchasing-related sustainable practices strategies your organization can implement to replace products with more sustainable choices and increase purchasing efficiency and cost-effectiveness over the course of the following year.

More information concerning:
- Purchasing Inventory
- Incorporation into your Sustainability Plan
- Sustainable practice Strategies for Sustainable procurement

can be found on *AZA, 2013, Volume II, p. 25, 26*

Purchasing Resources can be found on: *AZA, 2013, Volume II, p. 26, 27.*

Recommendations for practical considerations and first steps towards a sustainable procurement can be found on: *BIAZA, 2013, p. 27-32*

10. Innovation

Every AZA or EAZA – accredited zoo or aquarium is unique and has its individualized challenges and strengths. Each institution is encouraged to 'think outside the box' in order to introduce new concepts, designs, or strategies into your Sustainability Plan in addition to adapting existing ones.

General Innovation Recommendations can be found on: *AZA, 2013, Volume I, p. 21*

1. The Green Team should assess the organization's current management strategies for conceptualizing and implementing innovative sustainable practices by **Innovation Inventory**.

2. The **Innovation Inventory** should be conducted and updated on an annual basis and should:
   -Identify the ways in which innovation has been incorporated into your organization's workings in order to improve sustainable business operations across the organization, specify partnerships (with private, local, or state organizations) that make your sustainable practices stronger, and describe ways in which staff is encouraged to think outside the box
   -Quantify the number of innovative ideas your organization has implemented, and the amount of money saved based on the implementation of these ideas, over the past year.

3. Results from the **Innovation Inventory** should be used to determine if there are innovation-related sustainable practices strategies your organization can encourage innovation in improving your organization's sustainable business operations over the course of the following year.

More information concerning:
- Innovation Inventory
- Incorporation into your Sustainability Plan
- Sustainable practice Strategies for Innovation

can be found on *AZA, 2013, Volume II, p. 23, 24*

Innovation Resources can be found on: *AZA, 2013, Volume II, p. 24*