

Using a systematic approach to achieve Zero Waste at schools

Seminar "Approaching the topic of Waste in schools and kindergartens"

16.12.2020, Adeline Mertenat

Adeline.Mertenat@eawag.ch



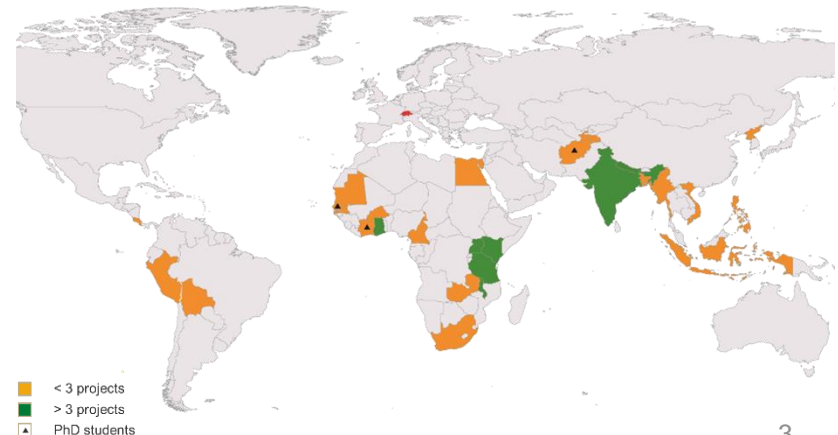
Few words about Eawag/Sandec

- **Eawag:** Swiss Federal Institute of Aquatic Science and Technology
- **Sandec:** Department of Sanitation, Water and Solid Waste for Development



Few words about Eawag/Sandec

- **Eawag:** Swiss Federal Institute of Aquatic Science and Technology
- **Sandec:** Department of Sanitation, Water and Solid Waste for Development
 - **Mandate:** To support, inform, and impact research, education, policy, standards, and practice towards achieving the SDGs
 - **Strategic research themes:**





Municipal Solid Waste Management Group

Research focused on enhancing resource recovery of organic waste, as close to the source as possible in order to alleviate problems of transport and disposal.

Research Topics:

- Carbonization of Urban bio-waste
- Black Soldier Fly (BSF)
- Anaerobic Digestion
- Composting



Indonesia



India



Tanzania



Indonesia



Municipal Solid Waste Management Group

Research focused on enhancing resource recovery of organic waste, as close to the source as possible in order to alleviate problems of transport and disposal.

Research Topics:

- Carbonization of Ur → Portfolio of waste management/reuse options exist
- Black Soldier Fly (B → Validation in case studies needed!
- Anaerobic Digestion
- Composting



Indonesia



India



Tanzania



Indonesia

4R principle in Schools











- Reduce, Reuse, Recycle, Recover
- ✓ Sustainable and efficient practices at school
- ✓ Awareness through education
- ✓ Concept of «learning by doing»



STEPS for implementing Zero Waste approach

National level

Case study level: Planning & Implementation

Overview Study	Baseline Assessment	Development of an Action Plan	Implementation of the Action Plan
<ul style="list-style-type: none"> - Literature review  - Interviews  	<ul style="list-style-type: none"> - Observations  - Interviews  - Measurements  	<ul style="list-style-type: none"> - Interpretation of results  - Development of ideas  - Discussions  	<ul style="list-style-type: none"> - Put into practice the action plan  - Operation and adaptation 

Key Questions

Behaviour change

Perceptions and practices
on waste management

Waste management assessment

Where is the waste produced?
Amounts and composition of waste?
Where does it go?

WASH assessment

How is the WASH situation?
Water, Hygiene, Sanitation

Community assessment

Behaviour in surrounding community?
Impact of waste management at school
on the community?



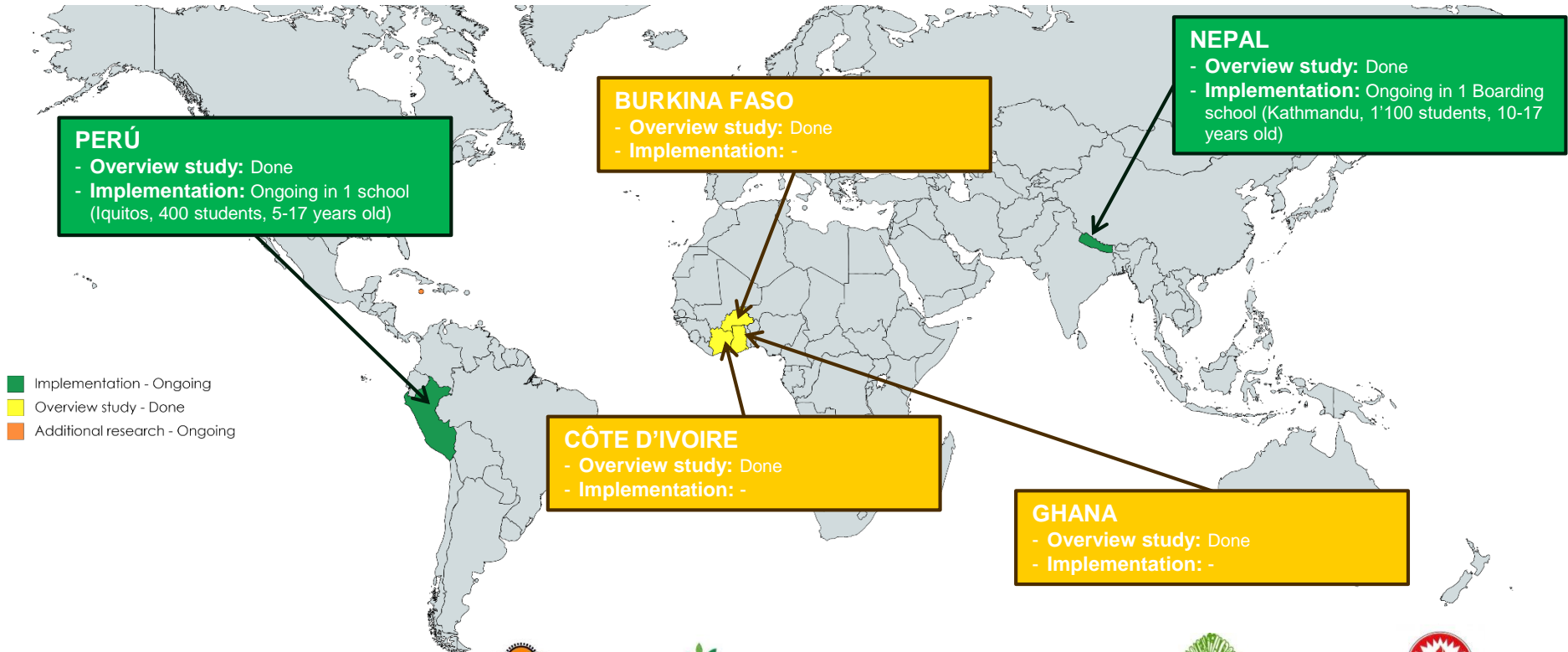
Recycling market

Is there a recycling market?
Which materials and at which price?

Curricula analysis

Are WASH/waste topics included
in the school curricula?
How to integrate them?

2020 Achievements

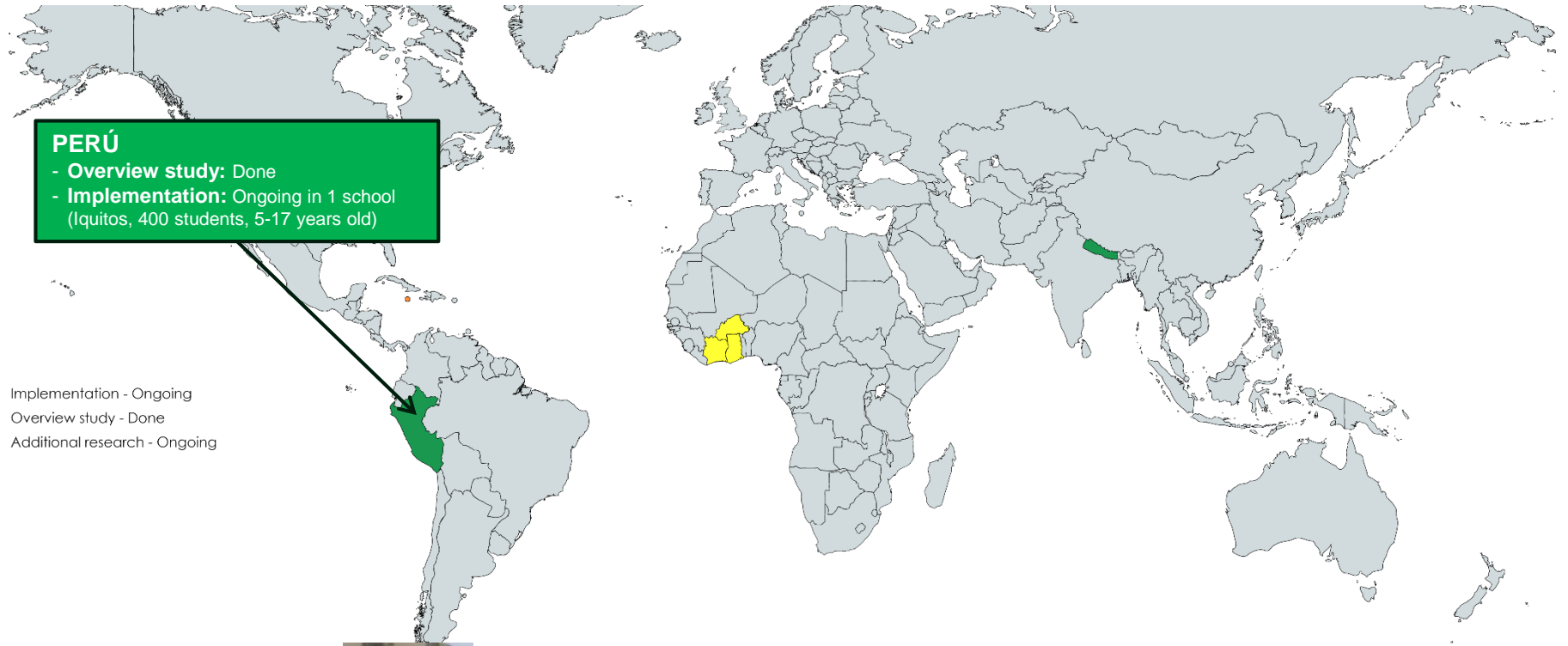


■ Implementation - Ongoing
■ Overview study - Done
■ Additional research - Ongoing

Partners:



ZW@S, Peru – Cristo Redentor School



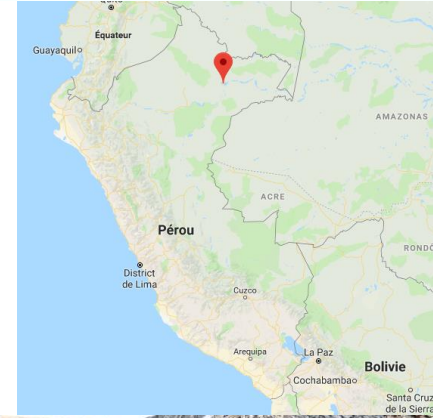
Partners:



ZW@S, Peru – Cristo Redentor School

Iquitos

- 6th city of Peru
- Located in the Amazonian basin (jungle)
- Population: 470'000 inhab. (75'000 in Bélen)

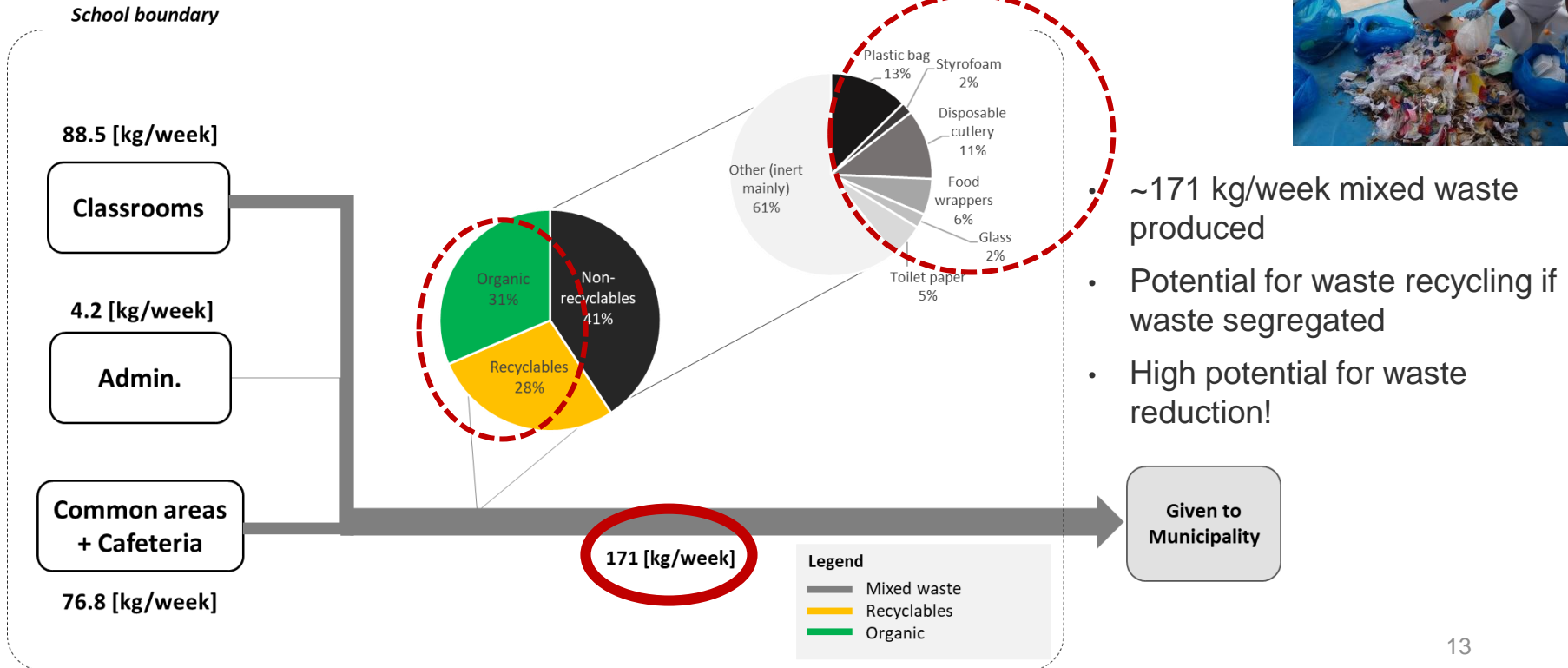


Background information

- 320 students + ~40 teachers
- 3 levels: kinder / primary / secondary
- Semi-private catholic/ecological school



Baseline Assessment



Development and implementation of the Action Plan

- 3bin waste segregation system
 - Recycling stations
 - Class interventions
- Waste reduction campaign
 - Cafeteria
- Workshop on Composting

1st time for Ciudad Saludable to steer Action Plan based on Waste assessment!



APARTIR DEL DÍA LUNES SE
ATENDERA CON SUS PROPIOS
ENVASES PERSONALES
CUMPLIENDO LAS DISPOSICIONES
DE ESTA DIRECCION
I.E.I CRISTO REDENTOR

Burkina Faso, Ghana, Côte d'Ivoire



- Implementation - Ongoing
- Overview study - Done
- Additional research - Ongoing

BURKINA FASO

- Overview study: Done
- Implementation: -

CÔTE D'IVOIRE

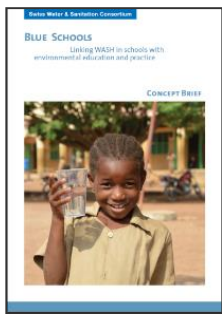
- Overview study: Done
- Implementation: -

GHANA

- Overview study: Done
- Implementation: -



Blue Schools Kit



8 FROM WASTE TO RESOURCES

KEY LEARNING OBJECTIVES

- Understand the importance of waste management and how waste pollutes our environment when not properly handled
- To learn and experience sustainable waste management practices

Blue Schools - Facilitator's Guide - 8 - From Waste to Resources

Topic 8 - From Waste to Resources

Let's be part of the Solution, not the Pollution.

Image source: iStock.com/steve

My Surrounding Environment	The Water Cycle	The Watershed around My School	My Drinking Water
Sanitation and Hygiene	Growth and Change	From Soil to Food	From Waste to Resources

8 FROM WASTE TO RESOURCES

This topic aims to encourage students to become conscious about the impacts related to bad waste management and what can be done to avoid this. It encourages them to apply all of principles which aim reducing the amount of waste generated by consuming less or differently, Reusing and Recycling waste. It helps them change their mind set and look at waste as a resource, if the waste is segregated at source into different types of materials.

LIST OF ACTIVITIES

- 1.1. How do you dispose of your waste?
- 1.2. How do you manage your waste?
- 1.3. How do you manage your waste?
- 1.4. How do you manage your waste?
- 1.5. How do you manage your waste?
- 1.6. How do you manage your waste?
- 1.7. How do you manage your waste?
- 1.8. How do you manage your waste?
- 1.9. How do you manage your waste?
- 1.10. How do you manage your waste?
- 1.11. How do you manage your waste?
- 1.12. How do you manage your waste?
- 1.13. How do you manage your waste?
- 1.14. How do you manage your waste?
- 1.15. How do you manage your waste?
- 1.16. How do you manage your waste?
- 1.17. How do you manage your waste?
- 1.18. How do you manage your waste?
- 1.19. How do you manage your waste?
- 1.20. How do you manage your waste?

QUESTIONS FOR DISCUSSION

- What types of waste do you produce and how much?
- How would you describe the waste (weight, volume, texture, ...)?
- What do you do with your waste? Do you put it in bins, throw it away, burn it, etc.?
- How could you produce less waste than what you are producing?
- How could you re-utilize/recycle the waste you produce?
- If you cannot recycle or reuse your waste, what can you do with waste to avoid environmental pollution?

Blue Schools - Facilitator's Guide - 8 - From Waste to Resources

INTRODUCTION

From Waste to Resources

Waste is a generic term that refers to something which is no longer used and is discarded. Problems with waste arise, if it is not managed appropriately, for instance if dumped illegally or openly burned. Open burning and inappropriate management of waste results in serious threats to human health and environmental pollution. This highlights the necessity to safely manage waste at schools and increase knowledge and awareness of students regarding risks but also show pathways for improvement.

Waste is made of different materials. For different materials also different management strategies can be applied that enhance their reuse, recovery and recycling. A precondition for this however is that the waste materials are not mixed together. If waste is segregated at source, some materials can be more easily recovered and turned into a valuable product/resource. This can significantly reduce the residual amount of waste that must then be safely disposed.

Tasks for a good waste management of the school are:

- To identify waste streams and quantity.
- To separate your waste into the different waste fractions.

For those fractions where no recycling/reuse or treatment is feasible, avoid, reduce, and finally, dispose it in a safe way when necessary.

The following chapters show different organic waste recycling options as well as treatment and safe disposal options for nonrecyclable/recycled fractions. Check also the Catalogue of Practical Exercises to see what you can do with each fraction.

	Organic waste Green waste Brown waste	Resource recovery option Worm bin composting (B.2) Incineration (B.3) Anaerobic digestion (B.4)	Safe disposal (not preferable) Burying
	Paper waste Used paper Used cardboard	Resource recovery option Reuse the bottles Sell to recyclers	Safe disposal (not preferable) Burying
	Plastic waste PET bottles Packaging	Resource recovery option Reuse the bottles Sell to recyclers	Safe disposal (not preferable) Burying (B.5)
	Metal & Glass waste Metal and glass Soft to recycle	Resource recovery option Reuse metal and glass Sell to recyclers	Safe disposal (not preferable) Burying (B.5)
	Menstrual waste Women (menstruation towel)	Safe disposal Collecting, transporting and increasing in nearby hospital	Safe disposal (not preferable) Incineration (see (B.3))

Take-home messages

- Waste management : challenging worldwide !
- Behavior and perception change needed !
- Good assessment of the school waste management needed
 - If done with students, school staff and involving parents: better
- Plan Actions to be taken accordingly
- Consider waste management as a cross-cutting issue



→ **KEY: Shift of paradigm – Waste as Resource**



Thanks for your attention!

Adeline Mertenat
Adeline.Mertenat@eawag.ch

<https://www.eawag.ch/en/departament/sandec/projects/mswm/zero-waste-schools-and-communities/> (Guidelines for Zero waste approach: to be released end 2021)

<https://ypg.iswa.org/working-groups/education/> (List of resources for teachers to be released April 2021)