Digital tools for education
Workshop

Zakhar Maletskyi

- Learning Management Systems for harmonization of water-related education
- Tools for digital interaction with students
- Development of interactive presentations
- Tools for Collaborative Brainstorming & Group Decision-Making with students
- Digital workshop "Solutions to water & climate change nexus"

courses

software

documentation

system

education

management

e-Learning

HISTORY AND TRENDS OF

LEARNING MANAGEMENT SYSTEM

A learning management system (LMS) is a **software application** for the administration, documentation, tracking, reporting and delivery of electronic **educational technology** (also called **e-Learning**) courses or training.

1990 — FIRST LMS

FirstClass is released by SoftArc. Still working today, FirstClass has been recognized as the first real Learning Management System. The system runs on personal Macintosh computers, allowing access many home desktop users, not just mainframe users.

It also supports private email and public forums, allowing students to ask questions and clarify theory presented in learning modules. The United Kingdom's Open University uses FirstClass to deliver online learning across Europe.

1997 — MySQL

The Interactive Learning Network is developed by CourseInfo. This is the first LMS to use a relational MySQL database. The Interactive Learning Network is installed at Yale, Cornell and other academic institutions.

SCORM 2004

2004

SCORM 2004 (Shareable Content Object Reference Model), a set of standards for training technology, becomes the basis for many current Learning Management Systems.

FIRST OPEN-SOURCE LMS RELEASED

2002

Moodle is released and remains one of the most popular open-source LMSs available online. Users need only download the software to their home PC to start learning.

2005

RISE OF FLASH VIDEO

Flash became an animation and authoring tool, which is crucial at creating multimedia content. Online Video is critical for implementing powerful multimedia and/or webcast functionality and making EdTech product more engaging.

2005

VIRTUALONDEMAND

Released by NACON Consulting, VirtualOnDemand was the first distance education system to allow users to train in software programs with only a web browser. Later, the US Army began using the system to train IT support personnel.

2008 — MOBILE WEB

In 2008, mobile access to the internet exceeded desktop access for the first time. Businesses started looking towards creating a condensed "mobile" version of their websites.

New mobile technology, such as hand-held based devices, is playing a large role in redefining how we receive information. This brings us to M-learning or mobile learning is the delivery of learning, education or learning support on mobile phones, PDAs or tablets.

2008 — FIRST CLOUD BASED OPEN SOURCE LMS

Eucalyptus, the first cloud-based open source Learning Management System, is released. It stores information and runs entirely on the Internet, meaning that companies require no servers or internal networks to make use of it.

With this invention, courses can now be run without classrooms, with vastly reduced teaching staff and without the need for a supporting mainframe, requiring only that instructors, students and administrators log in from their home computer.

2012 — SaaS LMS

Modern SaaS Learning Management Systems take advantage of cloud-based technology. Companies are freed from the burden of developing or installing in-house systems. Many LMS applications also support delivery to mobile devices using WiFi.

2013 — TIN CAN API

The Experience API (or Tin Can API), the next generation of SCORM, was released as version 1.0.0.

Learning Experience

Collaboration
"Discussion Group"
Portals
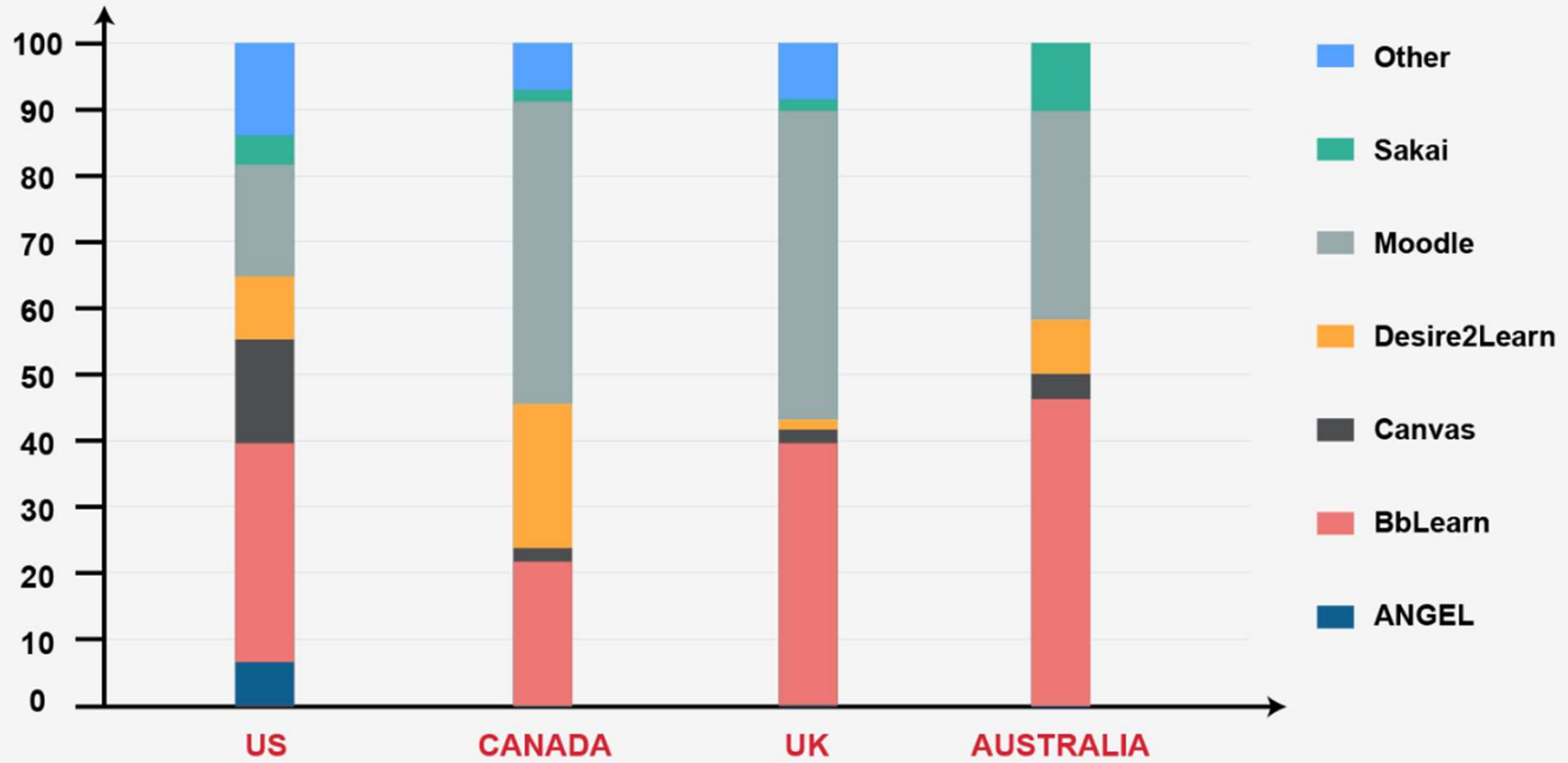
Learning Administration

Course Administration
Enrollment and scheduling
Resource Management
Extended enterprise
e-Learning
eCommerce
Virtual classroom
Assessment tool
Security and roles
Reporting

User Experience

Mobile, Flexible UI

Social & Collaboration

Dynamic Profile
Expert Directory
Recommendation Engine
Communities
Tagging
Video management
Ratings
Feedback Management
Content Sharing
Content Management

Administration &Talent

OLD LMS Feature Set
+ Deeper Analytics

Talent Management

EVOLUTION OF LMS

2010s
Learning Anytime, Anywhere

1970s
Classroom Registration Administration

1990s
Web Learning & On-demand Learning

1980s
Computer-base Cd Training

- Augmented Reality (augmented learning);
- m-Learning;
- Gamification;
- Big data;
- Personalized Learning Experience (PLE);
- MOOCs (massive open online courses);
- Automation;
- APIs;
- A tendency towards cloud-based LMSs (87% - web-based LMS, 13% - installed LMS);
- Switching To Another LMS - 66% of those organizations that have decided to switch to another LMS, express as main reason for such a shift the fact that there were additional features required that their previous LMS could not support;
- NGDLE (next generation digital learning environment), the successor to the LMS;

The NGDLE would behave similarly to a smartphone in that it would aggregate elements of content and functionality supported by a cloud-like space that would not be identical for any two learners, instructors, departments, or institutions.

EduWater

Curricula development 1

- 11 courses

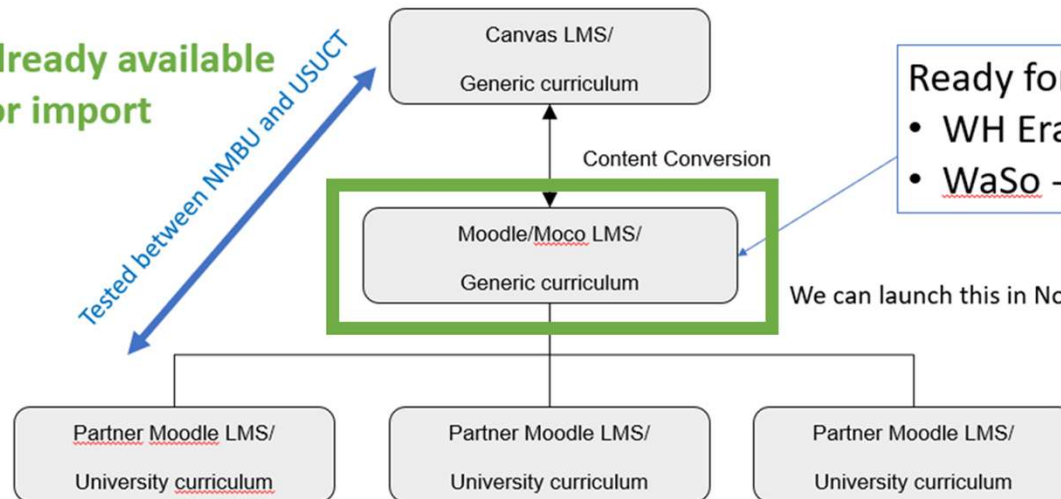- + 7 country-specific chapters to be included to the WaSo textbook

2

E-learning

Already available for import

Tested between NMBU and USUCT

Canvas LMS/ Generic curriculum

Content Conversion

Moodle/Moco LMS/ Generic curriculum

Ready for placement:
- WH Erasmus+ courses
- WaSo - some

We can launch this in November

Partner Moodle LMS/ University curriculum

Partner Moodle LMS/ University curriculum

Partner Moodle LMS/ University curriculum

Not secure | eduwater.net

Water Harmony
Community HUB

WH HUB   COURSES   PARTNERS   FOR EDUCATORS & STUDENTS   **LOGIN**

WATER HARMONY COMMUNITY HUB

Exchanging eLearning content and experience in water-related higher education

Modern water courses

Teachers collaborating in international projects developed water courses covering recent technologies, management practices and trends

Co-created by worldwide network

Water professionals from 45 universities and 30 countries collaborating in international projects contributed according to their areas
of competence, interests and experience

Peer-reviewed & tested content

Available for students & professionals

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Peer-reviewed & tested content

Content of courses was peer-reviewed by leading water experts

Available for students & professionals

Partner universities offer enrolment online or in-class

Water Harmony

DiKU Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education

The Research Council of Norway

Norad

Co-funded by the Erasmus+ Programme of the European Union

PARTNERS

Search for Partner

Group | Any ▼

Network | Any ▼

AAU - Addis Ababa University

Acsa Obras E Infraestructuras-Sorigué

Asker municipality

AUTH - Aristotle University of Thessaloniki

BGU - Ben Gurion University

BOKU - University of Natural Resources and Life Sciences

BSTU - Belarusian State Technological

HIGHLIGHTED COURSES

Water Supply

Water Resource Management

Industrial Water Management

Wastewater Treatment & Engineering

Innovation & Entrepreneurship

Academic Writing

Laboratory Practicum

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Water Harmony

Home

Course List

Search Course

Type Course Name or Course Tag 🔍

Country

Select Country

University

Select University

Laboratory practicum

The laboratory practicum course is developed to improve the effectiveness of laboratory knowledge and skills in the water field and to learn the standard methods for evaluation of water quality indicators.

Course content

This course contains practical and theoretical lessons.

Learning outcome

Knowledge: The course gives an introduction to quantitive analysis, the determination of alkalinity, acidity and carbon (IV) oxide content in samples of natural water, COD, Coagulation, Optimal doses of the coagulant, Filtration, practical manuals for lab work performance

What You'll Learn:

- Introduction to spectrophotometric analysis
- Preparation of the calibration graph
- Learning how to use micropipettes and macropipettes

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What You'll Learn:

- Introduction to spectrophotometric analysis
- Preparation of the calibration graph
- Learning how to use micropipettes and macropipettes
- Learning how to take groundwater samples and their preparation

Download

Industrial WW management

Discussion

- Which LMS do you have?
- ...
- How do you use it?
- ...

Which good practices we can develop / implement?

- …

Tools for digital interaction with students

What students expect from our lectures?
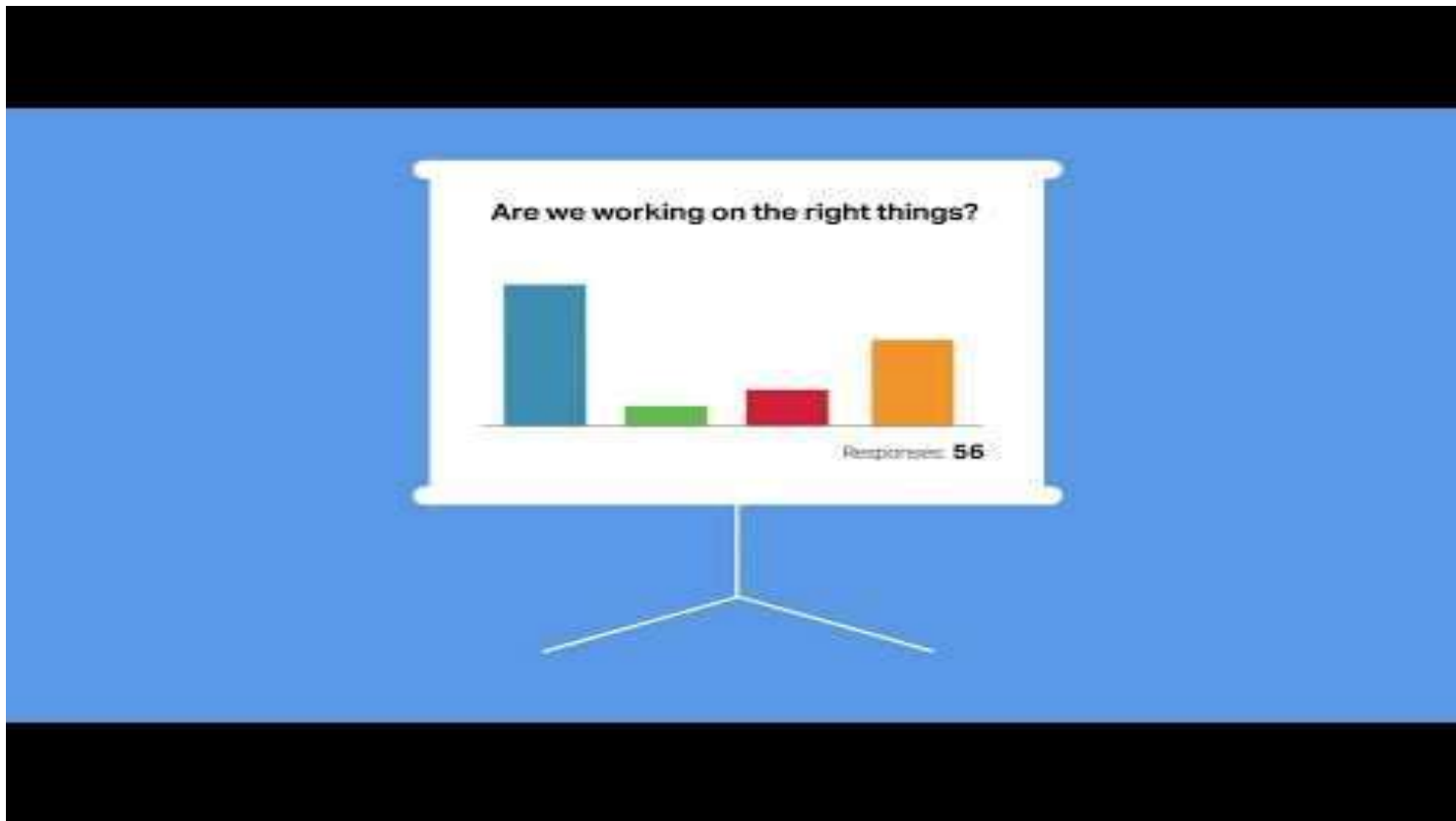
- …

Good practices?

Surveys - Slido

Game-based learning - Kahoot

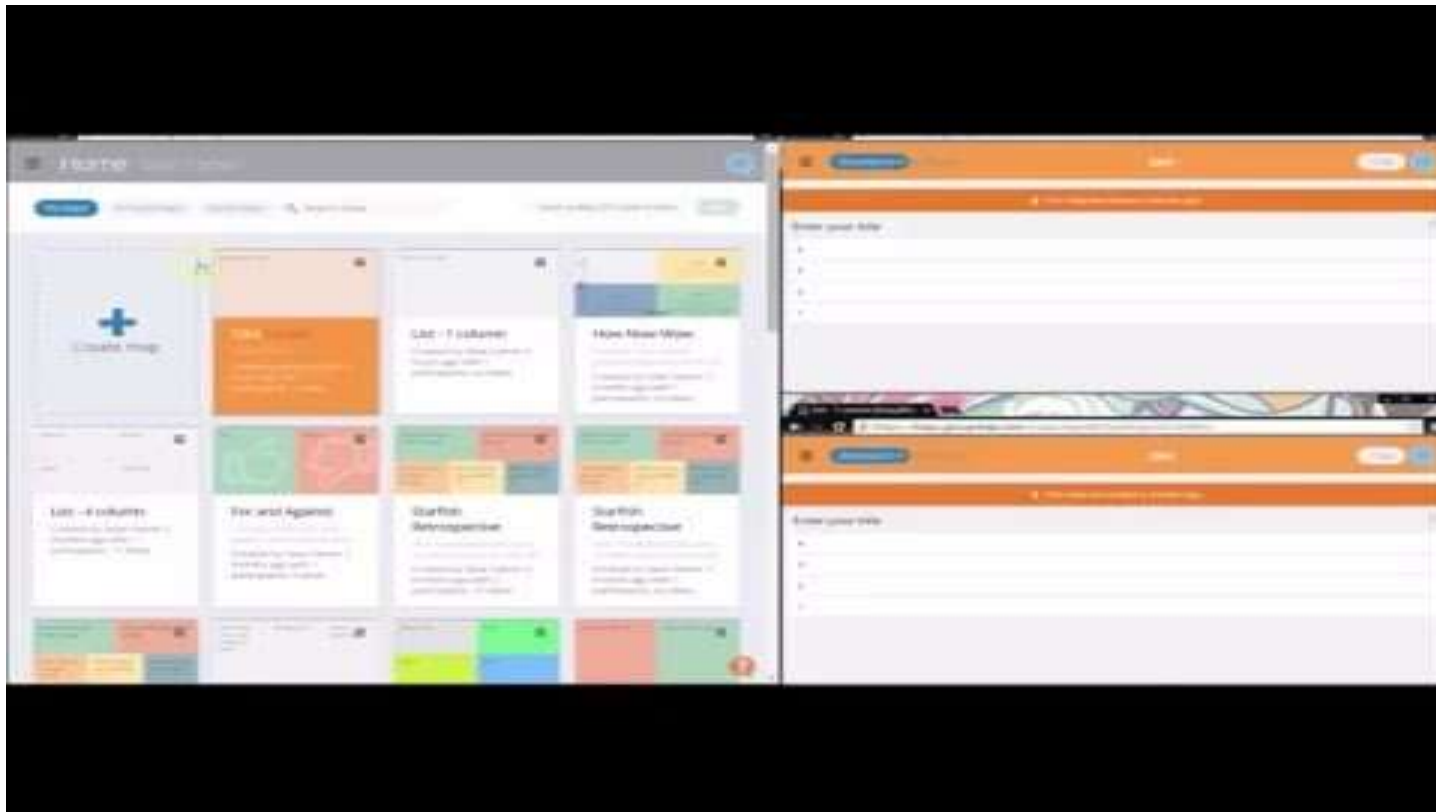# Surveys + game-based learning - Mentimeter

Examples from NMBU

(online demonstration)

Collaborative Brainstorming & Group Decision-Making

Groupmap

Padlet

MindMap

Tony Buzan

Digital workshops

Designing, preparing and carrying out

Subject inputs

The Economist

Climate of fear

How to think about global warming and war

They are linked—and that is worrying

May 23rd 2019

Did climate change cause the war in Syria? Or the genocide in Darfur? Obviously, that is not the whole story. Suppose Syria's despot, Bashar al-Assad, or Sudan's former tyrant, Omar al-Bashir, were to find themselves on trial in The Hague and tried to blame their country's carnage on global warming. Such a risible defence would flop. No conflict occurs without leaders to give orders and soldiers to pull

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HEATING UP

HOW CLIMATE CHANGE CAN FUEL WARS

Droughts are already making conflict more likely. As the world gets hotter, mayhem could spread

PRINT EDITION | INTERNATIONAL

May 25th 2019 | BAGA SOLA, CHAD, BAMAKO, MALI AND THE HAGUE

On the outskirts of Baga Sola, a small town in Chad not far from the border with Nigeria, is a refugee camp called Dar es Salaam. The name means "haven of peace", but the surrounding area is an inferno of war, spilling across the borders of four countries: Chad, Nigeria, Niger and Cameroon. Some 2.4m people have been forced to flee the fighting.

The most obvious cause of their suffering is ideological. The jihadists of Boko Haram want to establish a caliphate, snuffing out such sins as Western-style education and imposing a harsh form of sharia (Islamic law) as the sole system of government. To this end, they torch villages, behead aid-workers and enslave or strap bombs to young girls.

NATIONAL GEOGRAPHIC

https://news.nationalgeographic.com/2018/03/world-water-day-water-crisis-explained.html

From Not Enough to Too Much, the World's Water Crisis Explained

Many more cities than Cape Town face an uncertain future over water. But there are emerging solutions.

BY STEPHEN LEAHY
PUBLISHED MARCH 22, 2018

"Day Zero," when at least a million homes in the city of Cape Town, South Africa, will no longer have any running water, was originally scheduled for April. It was recently moved to July. The three-year long drought hasn't ended, but severe water rationing—limiting people to a mere 13 gallons (50 litres) per person per day—has made a difference. (To put this into perspective, an average U.S. citizen uses 100 gallons (375 liters) per day.)

"No person in Cape Town should be flushing potable water down a toilet any more.... No one should be showering more than twice a week now," said Helen Zille, the premier of the Western Cape province, where Cape Town is located.

Like many places in the world, Cape Town and the surrounding region has likely reached "peak water," or the limit of how much water can be reasonably taken from the area, says water scientist Peter Gleick, president-emeritus of the Pacific Institute. Gleick, who has spent substantial time in South Africa, says the country generally has good water managers.

"Two years ago, I would not have predicted Cape Town would face day Zero," he said in an interview. However, climate change has disrupted the Earth's hydrological cycle (water cycle), changing when, where, and how much precipitation falls. That has made water management planning far more challenging, he said. Yet our water systems were largely built based on the more stable climate of the past.

"What's happening in Cape Town could happen anywhere," says Gleick.

Subject inputs

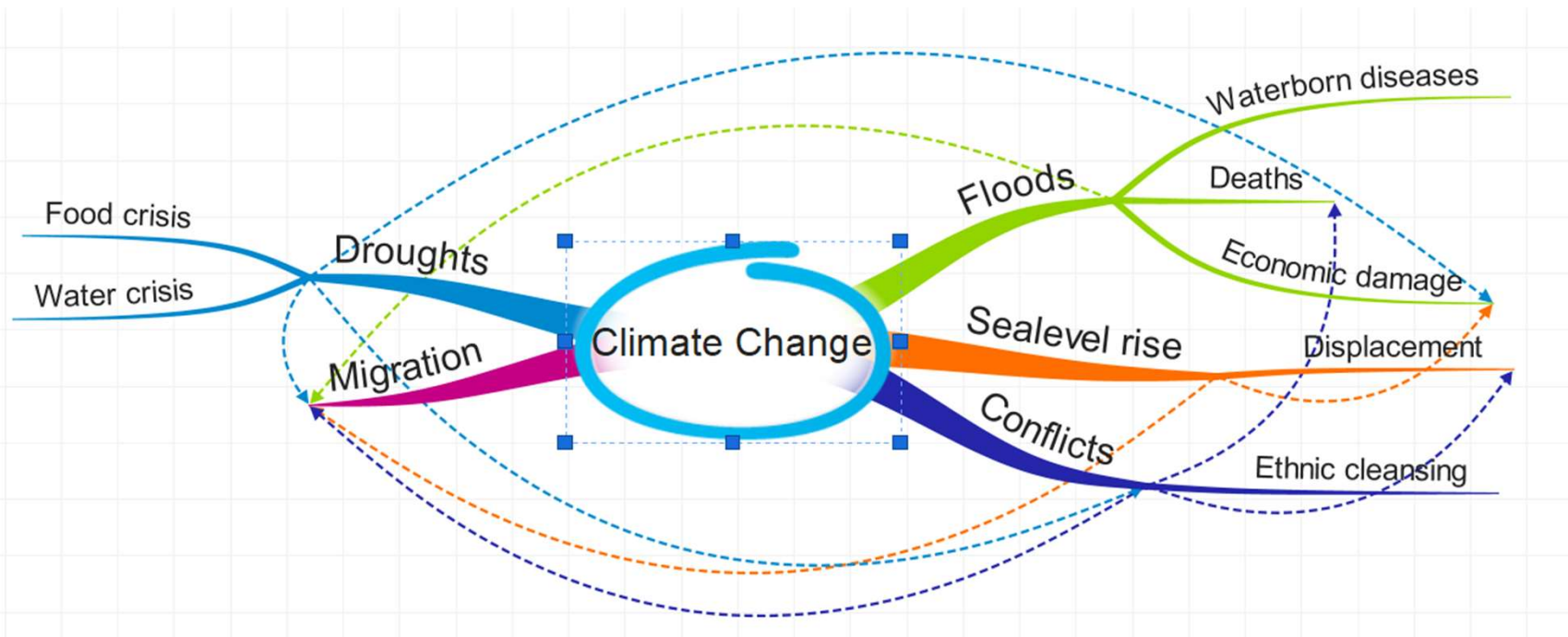**The Leaders of These Sinking Countries Are Fighting to Stop Climate Change. Here's What the Rest of the World Can Learn**

By Justin Worland | Photographs by Christopher Gregory for TIME
June 13, 2019

Central idea

- Climate Change
- Water scarcity
- Conflicts
- Disaster
- Water footprint
- Food shortage
- Migration
- Writing skills
- Mitigation and adaptation
- Pollution
- Decision making
- Floods

Food crisis
Water crisis
Droughts
Migration
Climate Change
Floods
Sealevel rise
Conflicts
Waterborn diseases
Deaths
Economic damage
Displacement
Ethnic cleansing

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and enter invite code

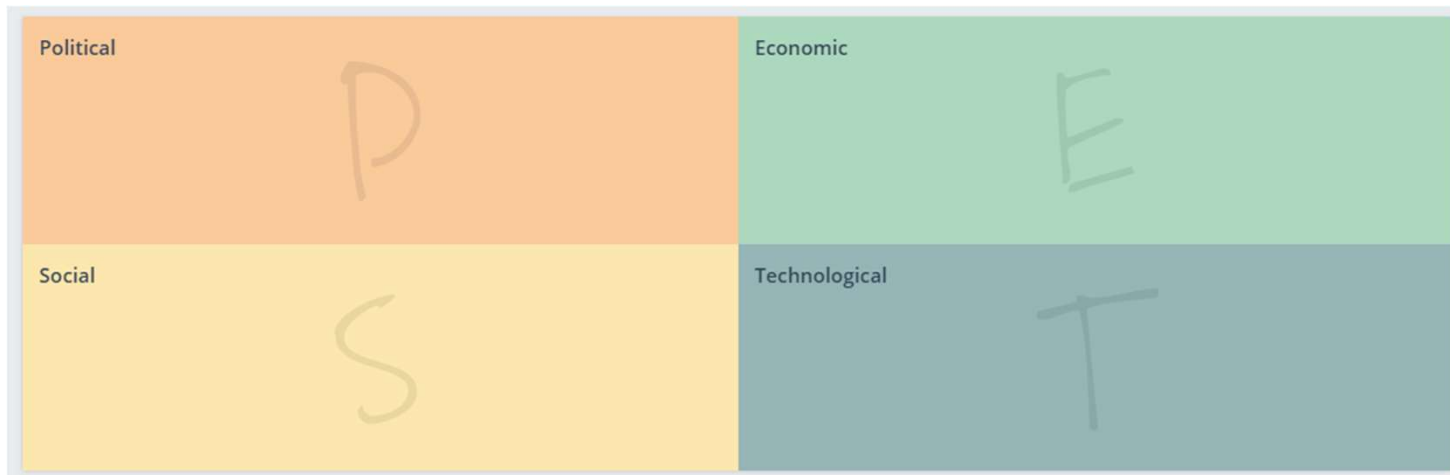921-847-717

https://join.groupmap.com/921-847-717

Tool structure

- How many and which factors to include?

PEST Analysis

PESTL Analysis

Political Any political action that could influence your decisions.	**Economical** This is the economy as a whole and the way it could affect what you're trying to do.	**Social** The social aspects that influence you and your target audience.
Technological Any way that technology can either threaten or improve what you do.	**Legal** Legal factors, legislative and procedural components in an economy or any changes to the law looming in the future.	**Environmental** Environmental factors have to do with geographical locations and natural resources used by your organization.