Transdisciplinary Case Study (tdCS) 2018
«Sustainability in Small Island Developing States (SIDS): Waste management in the Seychelles»

Information event, December 18, 2017
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Why the Seychelles as a case study?

Institutional
- Continuation of a long lasting (research) collaboration between ETH Zürich and (Ministry of Environment) the Seychelles
- Continuation of a MoU based collaboration with Uni Seychelles

Study object
- Example of a Small Island Developing States (SIDS)
- Size and accessibility to stakeholders
- Vulnerability and sustainable development as key challenges
- State in transition phase

Learning lab
- Sustainability Learning Lab incl. tdCS, MSc (BSc) theses, internships, local course
The Seychelles – **Key features**

**Location:** 4° -11° South; 46° -58° East

**Land mass:** 455 km² (115 islands; main island Mahe 148 km²)

**Sea area:** 1.4 million km² (EEZ)

**Geology:** (most) inner island granitic (43); outer island like Aldabra coralline; highest elevation Morne Seychellois (Mahe, 905 m.a.s.l.)

**Climate:** Average temp. 28° C; rainfall: 2300mm/a; average humidity 80%;

**Population:** 93’000; approx. 86% on Mahé; descendants of slaves/s.-holders

**Religion:** 76% Roman Catholic

**Political system:** Republic

**Economy:** Tourism and fishery

**Nature:** 50% of land mass is protected; 2 world heritages: Vallée de Mai; Aldabra Atoll

(Source: Lai et al., 2017)
The Seychelles – *Key challenges*

- Vulnerability by external disturbances
- Scarce land resources
- Waste management
- Water pollution
- Water shortage
- Invasive species
- Law enforcement
- Obesity
- Drugs
- Traffic
- Education
- …
Starting point:
tdCS 2016 "Solid Waste Management in the Seychelles"

(Source: Lai et al., 2017)
The current waste situation in the Seychelles (1/2)

- Most commodities and food need to be imported
- Almost 100% increase of waste dumped during the last 15 years
- >2kg waste/person/day dumped
- Approx. 50% of total waste is organic
- Current sanitary landfill Providence II (Mahé) fills up much faster than planned
- Landfill is on (scarce) reclaimed land
The current waste situation in the Seychelles (2/2)

- Daily collection of waste by a contracted private company
- All waste types dumped in the same landfill
- No sorting system at the source
- Levy system on PET bottles and aluminium cans – mostly collected by the informal sector
- PET, aluminium cans and scrap metals enter international waste stream
Key findings of tdCS 2016

- **Legal system**: Unclear distribution of responsibility within the ministry
- **Material flow**: to landfill go: PET <3%; glass >97%; scrap metal 60%; paper 100%
- **Leaching landfills**: Potentially severe environmental impacts on surrounding area of landfill
- **Biodegradable waste to energy**: Trade-off between econ. feasibility and reduction of amount of waste going to landfill
- **Optimizing recycling**: levy system for glass; formalized collecting system for PET, aluminium … needed; paper and card board??
- **Consumer perspective**: waste perceived as problem
- **Scenario modelling**: up to 10 new landfills by 2040 needed if…

(Source: Lai et al., 2017)
Output of tdCS 2016

- Report for the waste managers (particularly the Ministry of Env.)
- Newspaper supplement to inform the broad public
- Movie to inform students about the tdCS

→ see: http://www.tdlab.usys.ethz.ch/education/tdforsd/tdcs/former/cs2016.html
Case study 2018 – Potential working modules

- Waste sorting at the source:
  - Private sector (e.g., big hotels)
  - Private households

- Post sorting activities
  - Recycling (e.g., glass)
  - (Engineered) processing:
    - Biodegradable waste (e.g., energy production, food waste to protein, composting)
    - Incineration options (e.g., local, abroad)
Case study 2018 – Tentative guiding question

- “What (1) types of waste sorting at the source and (2) post-sorting options are technically feasible, economically viable, environmentally friendly and accepted by the users?”
Case study 2018 – Schedule

- The course starts on 21 February, 2018 and **meets every Wednesday 13-17** (Zürich)
- **Two block days** during the semester, Fri/Sat April 20-21, 2018 (Zurich)
- Three (four) interim weeks between end of Spring semester and field work in the Seychelles
- **Three weeks fieldwork** in the Seychelles: Mon June 25 – Fri July 13 2018 (tentative, may be postponed by one week)
- **Students from UniSey join** in person the teaching activities on June 25 2018, but will be involved already earlier in the Semester
Case study 2018 – Organisation

- Lead: TdLab (P. Krütli and M. Stauffacher), with strong involvement of UniSey and partners from Ministry of Environment, Energy and Climate Change; Seychelles Sustainable Tourism Foundation; NGO S4S; private sector
- Teaching team: TdLab (P. Krütli, M. Stauffacher, D. Nef, N.N.) & UniSey (N.N.)
- Joint teams of ETH/UniSey students
- Advisory Board of local experts
- ETH experts involvement according to the needs of the project (e.g. from the group of Prof. Hellweg: Mélanie Haupt)
Case study 2018 – Learning objectives

General learning objectives of the transdisciplinary case study

- Understanding a case in its context
- Knowledge application in the real world
- Independence in managing research activities
- Use of transdisciplinary (and other) methods
- Engage with stakeholders

And especially for the case study in the Seychelles

- Working in intercultural teams
- Adapting to foreign social, economic, cultural and political settings

→ getting trained for research and/or practical work in the global South
Case study 2018 – Expected output/outcome

- (Research) report (→ publication) in which results are documented
- Documentation of the results intended for the participants and a wider circle of interested people, e.g. newspaper supplement

Furthermore

- Contribution to solving the waste problem in the Seychelles
- Potential research questions for (BSc) MSc theses
- Capacity building – both for ETH students and local students, experts
- A further step to establish a Sustainability Learning Lab in the Seychelles
Eligibility

- MSc students from D-USYS (priority) and other ETH-Dept. like BAUG
- Limited number of students
- Send a letter of motivation (2 pages) referring to:
  - why are you interested?
  - what do you want to learn?
  - what would you be able to contribute to group work and the project setting?

By January 10, 2018, send your letter of motivation to both pius.kruetli@usys.ethz.ch and michael.stauffacher@usys.ethz.ch

- Criteria of selection: letter of motivation; student’s background/expertise; mix of MSc/major background; gender mix
- Costs: 600-800 CHF incl. transport
Further information you can find on the web

- General info on tdCS
  http://www.tdlab.usys.ethz.ch/education/tdforsd/tdcs.html

- First info on the CS2018
  http://www.tdlab.usys.ethz.ch/education/tdforsd/tdcs/current.html

- Info on the former CS2016 in the Seychelles