Indicators for enhanced fire safety

Assignment

- Identify and suggest 8-10 indicators that can be used long-term and followed up
- Suggest a number of measurable goals related to the indicators

National strategy to enhance fire safety

Vision:

No one should be killed or seriously injured as a result of fire

Aims:

The number of deaths and serious injuries in domestic fires shall be reduced by at least a third by 2020

The individuals awareness of fire hazards and how to act in case of fire, shall increase

The proportion of working smoke alarms and fire fighting equipment in homes shall increase

An indicator

- Measures something small that can represent something big
- Performance indicators always measure only a limited part of a goal. They provide an answer to whether something has happened, but not why it has happened. Performance indicators should always be considered in relation to established goals.
- An effect chain should be defined before the work of creating and selecting indicators begin.
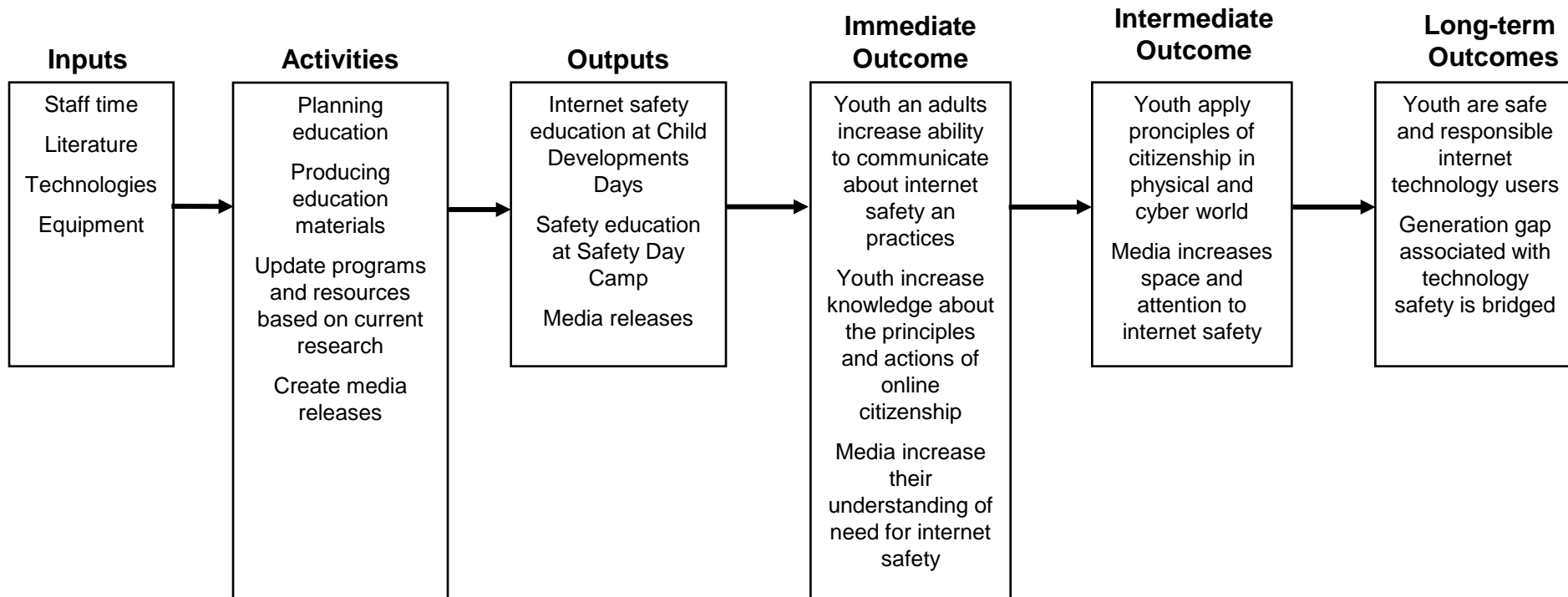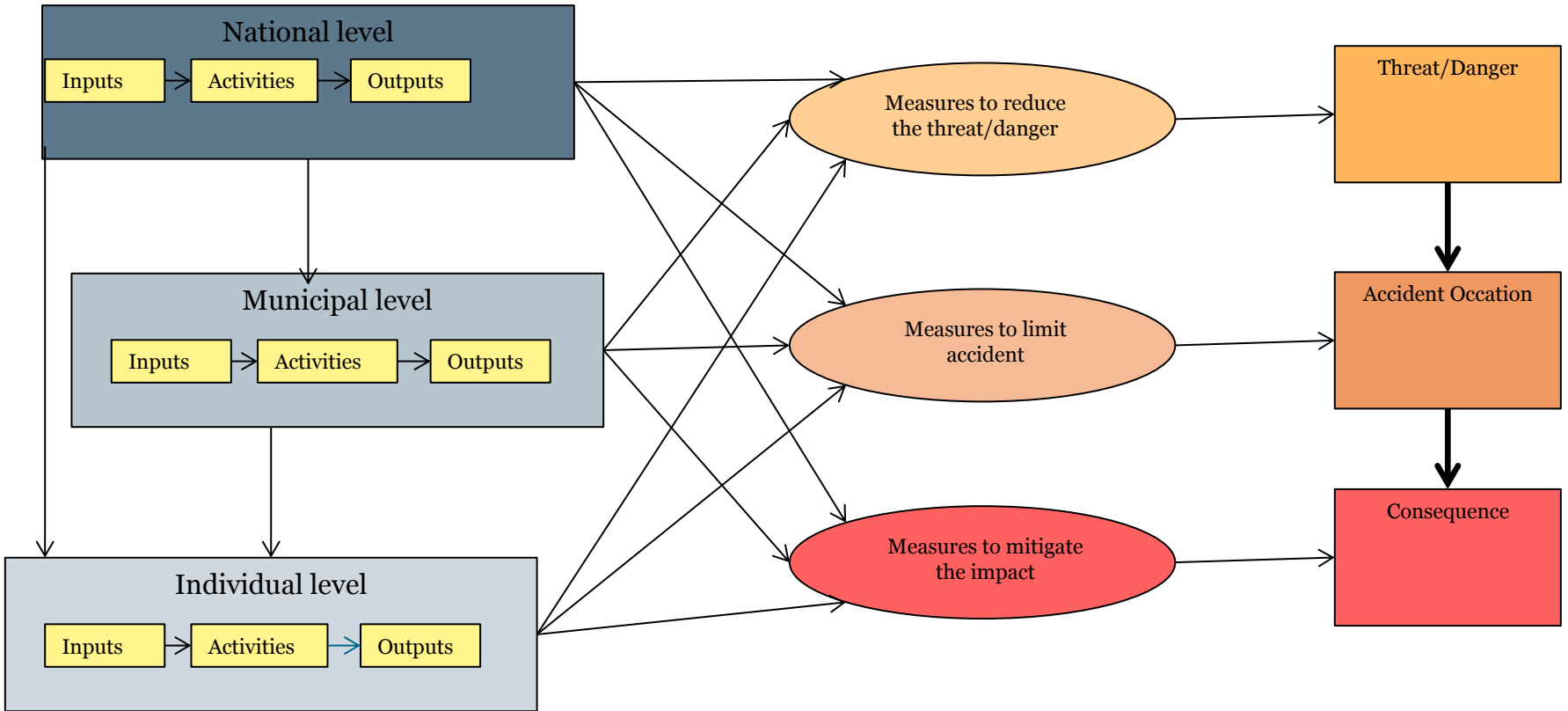
Program Theory

A program theory is a theoretical model that links cause and effect relationships. It is a set of hypotheses upon which people build their program plans. It is an explanation of the causal links that tie program inputs to expected program outcomes.

Program Theory
example: Technology and safety

Inputs	Activities	Outputs	Immediate Outcome	Intermediate Outcome	Long-term Outcomes
Staff time Literature Technologies Equipment	Planning education Producing education materials Update programs and resources based on current research Create media releases	Internet safety education at Child Developments Days Safety education at Safety Day Camp Media releases	Youth an adults increase ability to communicate about internet safety an practices Youth increase knowledge about the principles and actions of online citizenship Media increase their understanding of need for internet safety	Youth apply pronciples of citizenship in physical and cyber world Media increases space and attention to internet safety	Youth are safe and responsible internet technology users Generation gap associated with technology safety is bridged

Quality of an indicator

1. The indicator should have good **validity**. There should be a known correlation between development of the indicator and the number of people killed and / or seriously injured.

Quality of an indicator

2. The indicator should be **reliable**. It can be measured and monitored in the same way every year.

   It is more important that the indicator is reliable - and is measured in a consistent manner - than that it is measured in a fully representative way for the entire country.

Quality of an indicator

3. The indicator should be **easy to measure**, so that the process of measurement will not be too extensive, costly and complicated.

Quality of an indicator

4. Indicators should be the **same from year to year** so that the development of selected indicators can be monitored continuously (unless for unexpected reasons it becomes apparent that the indicator should be replaced by a more appropriate alternative)

Description of an indicator

- Title of the indicator
- Relation to the strategy
- Measurement
- Definition
- Location in the program theory
- Motive

- Data Level
- Data Collection
- Data Quality
- Owner
- Strategy
- Goal
- Start of measurement

Method

- Review of national and international indicators, plus the working group's proposals
- Result: 87 indicators
- Delphi Method

1. Existence of a functioning smoke detector

Relation to the strategy
The proportion of working smoke alarms and fire fighting equipment in homes shall increase

Measurement
a. Percentage of households with working smoke alarms
b. Proportion of home fires attended by the fire brigade where smoke alarms were triggered by the fire

Definition

a. Survey Question 2010.
"Do you have one or more smoke detectors in your home? If yes, "Does the smoke alarm function right now?" (In the survey that went out in 2014, the words "right now" were deleted)

b. In the current incident report under "Equipment intended for other than emergency services," "Was there a smoke alarm?" if yes "Did it work?".
From 2016 the question will be replaced by "Was there a smoke alarm in connection to the fire starting space", with supplementary question "Was the smoke alarm triggered."

Location in the program theory
Input on the individual level. Measures to limit accidents.

Motive
Civil Protection Act, 2 Chapter, 2 § and advice/comments in relation to how this paragraph should be interpreted for domestic smoke detectors from Swedish Rescue Services Agency

According Jaldell (2011), it is economically viable to increase the proportion of smoke detectors in single and multi-family homes. Jaldell (2011) Cost-benefit analysis and evidence of fire in homes - smoke detectors and portable fire extinguishers; MSB 309-11. According to building regulations, new homes shall be fitted with equipment to rapidly detect a fire and to make inhabitants aware of the need to evacuate.

Data Level
a. Available at the national level and partly at the municipal level
b. Available at national and municipal level

Data Collection
a. Via surveys
b. Via incident report

Data Quality
a. Available data from 1997, 2001, 2005, 2010. New survey was conducted in spring 2014. Good validity. Uncertain about reliability.
b. Time series since 1998. Good validity. Uncertain about reliability.

Owner
a.MSB. UL-LÄR.
b.MSB. UL-LÄR.

Strategy
a.Through surveys every third or fourth year.
b.Through incident report

Goal
a.In 2022, 95 percent of households have working smoke alarms
b.Share of home fires where smoke alarms triggered should
   increase by 20 percentage units from 2016 to 2020

Start of measurement
a.2010
b.2016

Other information
According to the survey in 2010, 85 percent of households had smoke alarms, and 75 percent had functioning smoke alarms.
Date for achieving goal a is set to 2022 because we conduct the survey every four years.
One problem for goal a is that municipal ambitions vary and many municipalities are not prepared to pay for a local survey.

Indicators for enhanced fire safety

1. Existence of a functioning smoke detector
2. Existence of fire fighting equipment
3. Actions taken by home fire victims
4. Number of developed home fires
5. Number of fatalities in home fires

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6. Number of severely injured in home fires

7. Cost of property damage in home fires

8. Percentage of homes with fireplaces with deficiencies in fire protection

9. Proportion of municipalities with developed cooperation for preventing home fires