Hvordan skal NNR2023 bruges

Ellen Trolle, Seniorforsker,
DTU Fødevareinstituttet
Forskningsgruppen:
Ernæring, Bæredygtighed
og Sundhedsfremme

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Primær brug af Dietary reference values (DRVs) i NNR2023

1) vurdering af næringsstofindtag på gruppe- og individ-niveau

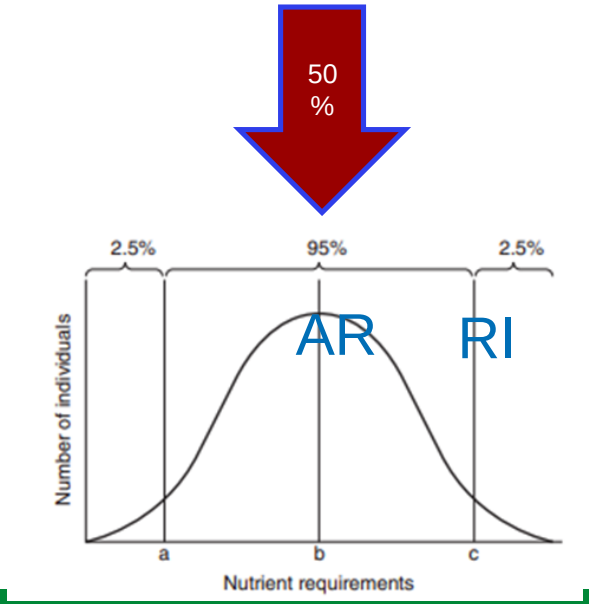
2) planlægning af måltider og hele kosten for grupper og individet

DRVs i NNR2023

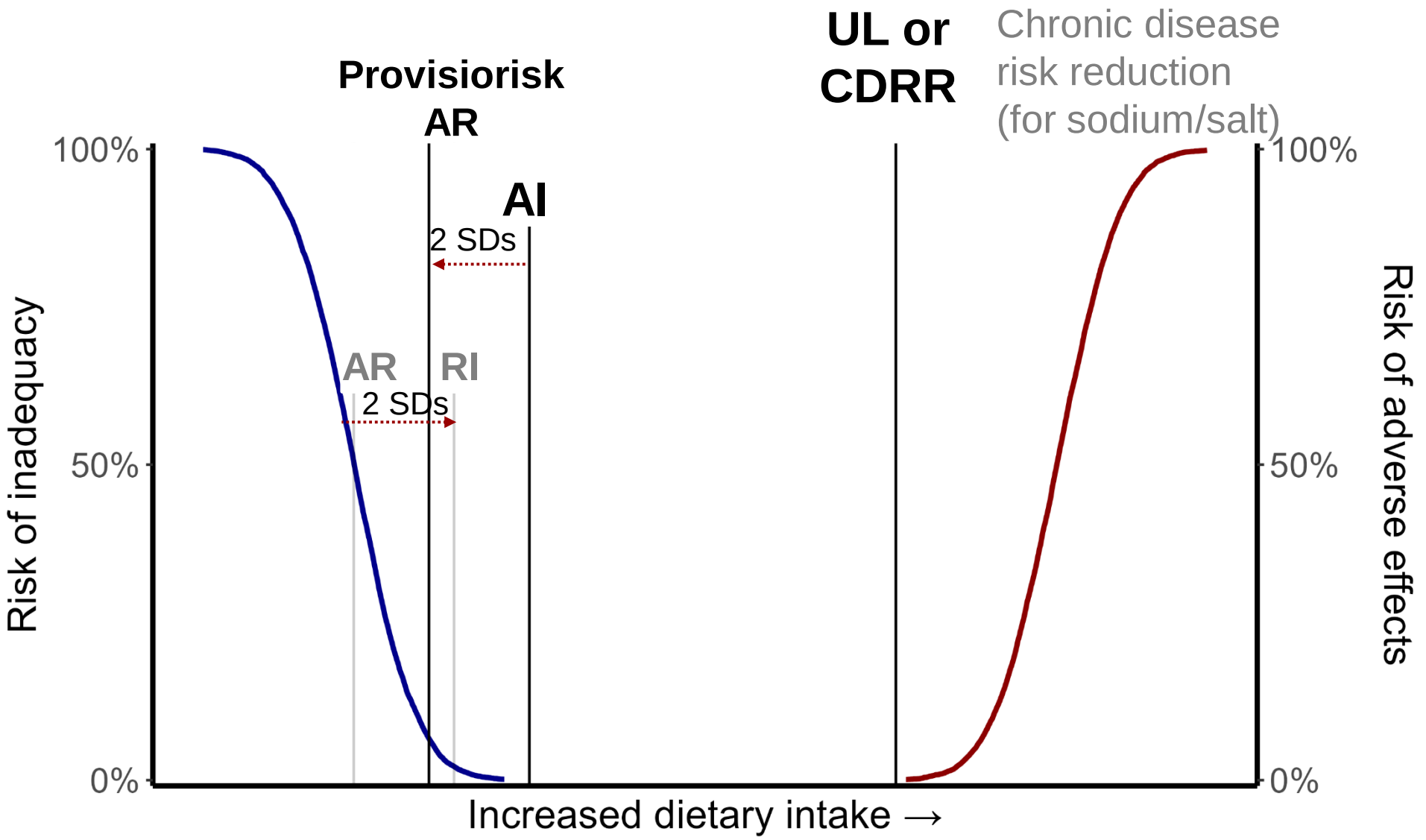
Referenceværdier for indtag af mikronæringsstoffer

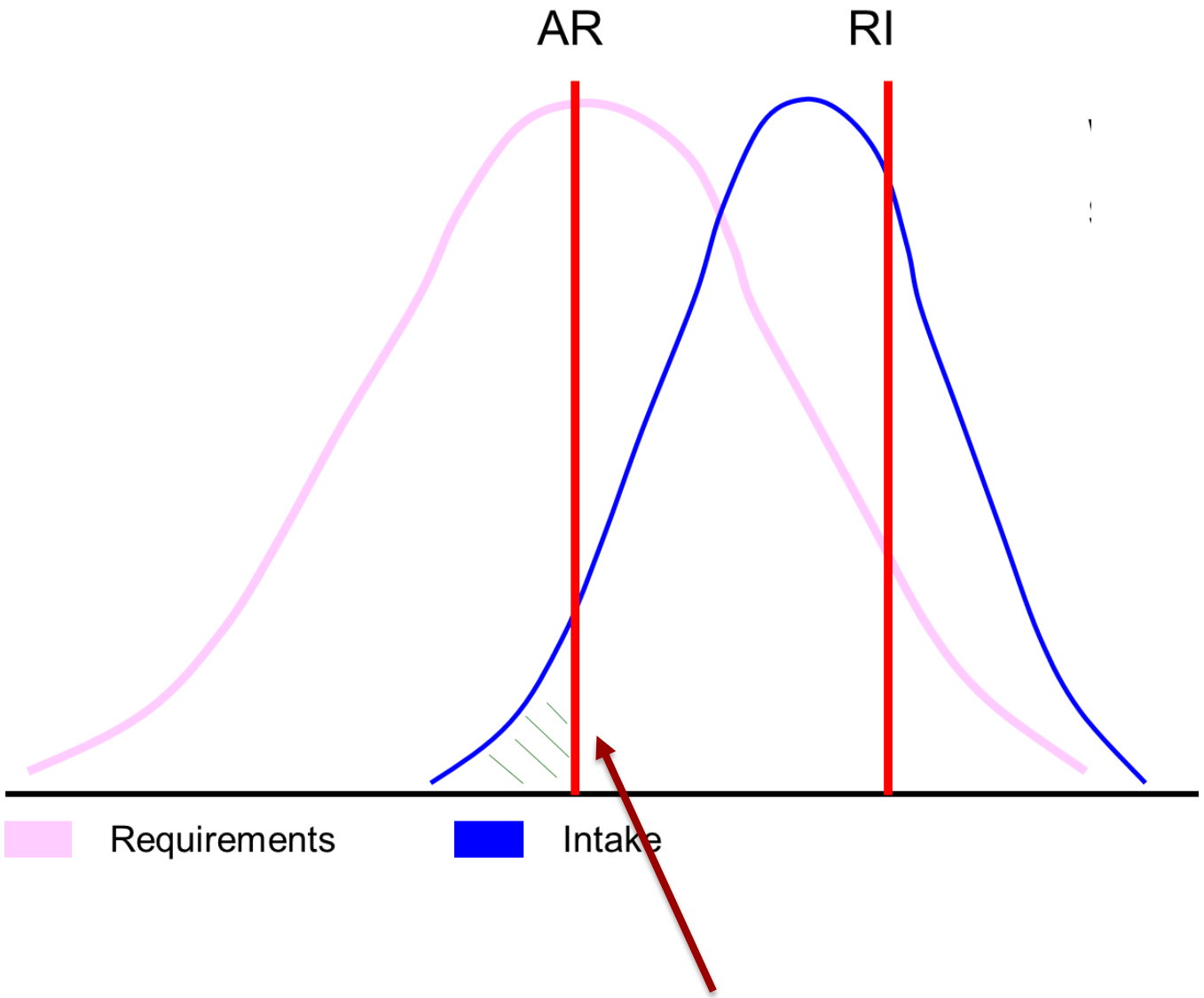
- AI
- Provisional AR
- RI
- AR
- UL
- CDRR Chronic disease risk reduction

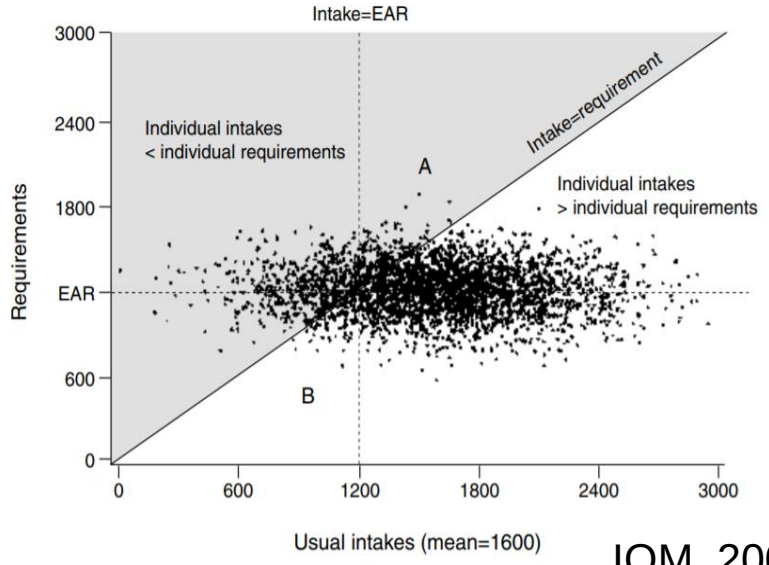
  (for natrium) SALT



Nye typer referenceværdier i NNR2023: AI, Provisorisk AR og CDRR




AR
RI
Requirements
Intake


Intake=EAR
Intake=requirement
Individual intakes
< individual requirements
Individual intakes
> individual requirements
A
B
EAR
Requirements
Usual intakes (mean=1600)
0
600
1200
1800
2400
3000

IOM, 2000

Reference weight and reference energy values

- The reference body weights are used for the calculations; are based on self-reported weights in Nordic populations (Appendix 4). The original weights have been adjusted so that all individuals would have a BMI of 23.

- The reference values indicate an energy intake that would maintain normal body weight in adults. Specific recommendations for energy intake cannot be given due to the large variation among individuals with respect to metabolic rate, body composition and degree of physical activity: the individual energy requirements might differ from these group-based average values.

Referenceværdier for energibehov

- **Vurdering, grupper**
- For energy, the reference values could be used as an indication, but the proportions of the group with BMIs below, within, and above the desirable range will reflect the proportions with inadequate, adequate, and excessive energy intakes over time.

- **Vurdering, individ**
- BMI or body composition should be used to assess the adequacy of energy intake in addition to a comparison to the estimated energy requirement

Referenceværdier for energibehov

- **Planlægning, grupper**
- For energy, the goal is that the mean intake of the group equals the estimated energy requirement. For a homogenous group, the reference values for energy requirement can be used. For a heterogeneous group, the average reference values for energy requirement can be used.

- **Planlægning, individ**
- Reference values relevant to the individual, and changes in body weight

Macronutrients

- These ranges are defined as ranges of intakes (expressed as percentage of total energy, E%) that are associated with low risk of chronic diseases while also providing adequate intake of essential nutrients. (EFSA, 2010; IOM, 2005; NASEM, 2023).

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Box 2: Recommended intake ranges of macronutrients for adults

Fats		**25-40 E%**
Cis-monounsaturated	10-20 E%	
Cis-polyunsaturated	5-10 E%	
Saturated fatty acids	<10 E%	
Carbohydrates		**45-60 E%**
Dietary fibre	>25-35 g/d	
Added and free sugar	<10 E%	
Proteins		**10-20 E%**

The recommended intake range

- is based on adequate energy intake and physical activity to maintain energy balance.
- is associated with reduced risk of chronic diseases while providing adequate intake of essential nutrients.
- If an individual consumes below or above these ranges, there is a potential for increasing the risk of a chronic disease, as well as increasing the risk of insufficient intakes of essential nutrients
- **The ranges are provided to give guidance in dietary assessment and planning by taking into account the probabilities related to the role of the total diet for risk of chronic disease**
- The recommended min or max energy percent (E%) of a subgroup of a macronutrient.

Makronæringsstoffer

- **Vurdering, grupper**
- For macronutrients with recommended intake ranges, the proportion of the group that falls below, within, and above range can be used to assess the proportion of the population that is outside the range. Intake of saturated fat, added sugars and alcohol can be compared with recommended upper threshold while dietary fiber and specific essential fatty acids can be compared with recommended lower threshold.

- **Vurdering, individ**
- Observed mean intake between the lower and upper bound of the recommended intake range is within the acceptable range
- If observed mean intake below the lower bound and above the upper bound of the recommended intake range may indicate concern for possible adverse health effects

Makronæringsstoffer

- **Planlægning, grupper**
- For macronutrients, a goal of planning is to achieve a macronutrient distribution in which the intakes of most of the group fall within the recommended intake range (middle of recommended intake ranges may be used as target), and the upper and lower threshold values should also be considered, for specific sub groups of macro nutrients such as fatty acids, added sugar, and dietary fiber. It is recommended to use the upper and lower thresholds and plan the diet to be well below or above these thresholds.

- **Planlægning, individ**
- Use national food-based dietary guidelines and middle of the recommended intake ranges. Consider upper and lower thresholds

AR, RI, provisorisk AR, AI – hvad er forskellen?

- **AR** The average daily nutrient intake level that is estimated to meet the requirements of half of the individuals in a particular life-stage group in the general population. AR is usually used to assess adequacy of nutrient intake of groups of people, and may be used in planning for groups.

- **RI** The average daily dietary nutrient intake level that is sufficient to meet the nutrient requirements of nearly all (usually 97.5%) individuals in a particular life-stage group in the general population. It can be used as a guide for daily intake by individuals. Usually used to plan diets for groups and individuals.

- **Provisorisk AR**. The average daily nutrient intake level that is suggested to meet the requirements of half of the individuals in a particular life-stage group. The provisional AR, which is an approximation of AR, has larger uncertainty than AR. It is calculated by multiplying AI by a factor of 0.8. Can be used when an AR cannot be determined
- **AI** The recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group people that are assumed to be adequate. The AI has larger uncertainty than RI. Can be used when an RI cannot be determined. The AI is expected to meat or exceed the needs of most individuals in a life-stage group.

Upper level and Chronic disease risk reduction level

- To establish whether a population is at risk for adverse effects, the fraction of the population exceeding the UL and the magnitude and duration of the excessive intake should be determined. There is a substantial uncertainty behind several of the Uls.

- Reductions in sodium intakes that exceed the chronic disease risk reduction (CDRR) of 2.3 g/d are expected to reduce chronic disease risk within the general population.

- UL The highest average daily nutrient intake level that is likely to pose no risk of adverse health effects to almost all individuals in the general population. As intake increases above the UL, the potential risk of adverse effects may increase.

- CDRR The level above which intake reduction is expected to reduce chronic disease risk within a life-stage groups in the general population. The CDRR represents the level of intake for which there was sufficient strength of evidence to characterize a chronic disease risk reduction.

Mikronæringsstoffer

The AR cut point method

- The percentage of the individuals that has an intake below the AR indicates the proportion that have an increased risk of inadequate intake.
- Provisional average requirement (pAR) calculated as 0.8 times the AI, assuming a CV of 12.5 %. This likely overestimates the true AR.
- To establish whether a population is at risk for adverse effects, the fraction of the population exceeding the UL and the magnitude and duration of the excessive intake should be determined.

Mikronæringsstoffer

- **Vurdering, grupper**
- For the micronutrient, if AR is defined, the AR can be used to estimate the prevalence of inadequate intakes using the probability approach or the AR cut-point method.
- If AR is not defined for the micronutrient, the Provisional AR may be used instead, taking into consideration that the estimation of Provisional AR is more uncertain than ARs
- If UL is defined for the micronutrient, this value can be used to estimate the proportion of a group at potential risk of inadequacy or adverse effects of high intake.

- **Vurdering, individ**
- Use the AR or Provisional AR and the qualitative probability approach, or use the AR or Provisional AR and knowledge about the CV of the requirement distribution for the quantitative probability approach, or the simpler quantitative z-score approach.
- (Trolle et al 2023a)

Mikronæringsstoffer

- **Planlægning grupper**
- For micronutrients, in a homogenous group the RI or AI and the nutrient density approach or the AR and probability approach can be used. If AR is not defined for the nutrient, provisional AR is used instead.
- In a heterogeneous group, target the most vulnerable sub-group with the highest nutrient demand. If not possible, use the nutrient density approach
- If UL is defined for the nutrient, this value is used to plan for an acceptably low prevalence of risk of excessive intakes.

- **Planlægning individ**
- Use RI, AI and UL if defined. Take uncertainty into account

- Hvis indtaget er under AR ….

- National authorities in countries where representative intake data for nutrients are lower than the ARs or provisional ARs should consider further investigations of nutrient status in specific risk groups before implementation of carefully planned nutritional interventions or programs to improve the respective nutrient intake.
- In such considerations, care should be taken to also include the uncertainties in the assessment of nutrient intakes, including distribution of intake, and the uncertainty in the provisional AR values.
- Especially, an intake lower than the provisional AR on group level does not necessarily point to inadequacy. Similar assessments may also be performed for other life-stage groups

Anden brug af DRVs

- ved udvikling af nationale kostråd
- regler om berigelse og kosttilskud
- ved mærkning af fødevarer, fx nøglehulsmærket
- produktudvikling
- fødevare- og ernærings-politikker og-strategier

Science advice on health and environmental effects of food

A framework for national authorities to set national SFBDGs

14 food groups for first time in NNR

- beverages; cereals; vegetables, fruits & berries; potatoes; fruit juice; pulses; nuts and seeds; fish; red meat; poultry; milk & dairy; eggs; fats and oils; sweets;
- + alcohol;
- + breastfeeding; complementary feeding

Dietary patterns

- Dietary pattern received recommendation/science advice

A framework for integrating environmental impact of food consumption

- The countries could follow the NNR2023 framework and define ambitious quantitative environment-based recommendations to achieve more environment-friendly recommendations, such as the most recent Danish FBDGs (Ministry of Food, 2021).

- Even more ambitious initiatives would be in line with the NNR2023 framework, international obligations and relevant declarations from Nordic Council of Ministers.

- A 5 step framework (by wood et al 2023) could be applied:
- *Step 1: Determine an average healthy diet for a given population and criteria for healthy diets (NNR2023)*
- *Step 2: Identify relevant environmental aspects and establish corresponding boundaries (Wood et al 2023)*
- *Step 3: Identify systemic effects and crucial sustainability aspects (background papers)*
- *Step 4: Alter the average diet to meet environmental goals and resolve trade-offs between environmental and DRVs (NNR2023)*
- *Step 5: Formulate sustainable food-based dietary guidelines*
- (Trolle et al 2023b)

Modellering af planterig kost, baggrund for de officielle kostråd for sundhed og klima

Development of national recommendations

Nutrient recommendations

- Adopt and implement in national policies

Dietary guidelines

- Adopt the NNR2023 framework for healthy and environment-friendly dietary guidelines
- Define specific targets for environment-friendly guidelines in accordance with NNR2023 framework
- Implement in national policies and establish national policies to reach targets

TAK - ?

Hvordan skal NNR2023 bruges

Tak til NNR2023 komiteen

Og kolleger i forskningsgruppen

Ernæring, Bæredygtighed, Sundhedsfremme.

Seminar DTU 11. september 2023